**Kaunas University of Technology**

School of Economics and Business

# Response Burden Reduction Through the Integration of Accounting Information System Data

Master's Final Degree Project

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# Response Burden Reduction Through the Integration of Accounting Information System Data

## Declaration of Academic Integrity

I confirm that the final project of mine, Renata Tumėnienė, on the topic „Response Burden Reduction Through the Integration of Accounting Information System Data“ is written completely by myself; all the provided data and research results are correct and have been obtained honestly. None of the parts of this thesis have been plagiarised from any printed, Internet-based or otherwise recorded sources. All direct and indirect quotations from external resources are indicated in the list of references. No monetary funds (unless required by Law) have been paid to anyone for any contribution to this project.

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**Summary**

Every company more or less have ever faced the response burden that emerges from the reporting obligations to various institutions, such as the State Tax Inspectorate, the Center of Registers, or the National Statistical Institute. The variety of provided reports is huge, and the burden of preparing data for specific reports is time-consuming for companies. Probably the biggest response burden for companies is created by the National Statistuical Institute, requiring companies to provide a wide range of information. Often, the information provided by companies to Statistical Institute duplicates with the information provided to other institutions. Therefore, this paper deals with the burden of statistical reporting. In these times of technology, a big quantity of data is being generated that could be used to reduce the statistical reporting burden. Instead of collecting information directly from companies, existing data from administrative sources could be used and integrated into statistical reports, thus reducing the statistical reporting burden on companies.

The main problem of this work is: how to improve the response burden reduction for companies by integrating data from accounting information systems?

The object of the work is an improvement of the response burden reduction for companies that must provide statistical reports for National Statistical Institute based on accounting data.

The aim of the work is to propose a model for response burden reduction by integrating companies‘ data of the Accounting Information System into a statistical report.

The methods of the work are scientific literature analysis which is used for the analysis of a scientific problem and theoretical justification of the conceptual model, and semi-structured interview (questionnaire survey), case study, and benchmarking methods which are used to test the model in practice.

Having Implemented the aim of the work, the following conclusions were reached:

1. The analysis of the problem allowed to disclose and understand the concept of the response burden from various perspectives. The main idea of reducing the response burden was to automate the data collection process by integrating data from one accounting system into another. The analysis of the problem showed that there is a lack of information on how to integrate data from accounting information systems into statistical questionnaires using data standardization tools. This proved that the problem is relevant and can be examined in more detail.

2. Examination of the theoretical aspects of data integration, closely related to the possibilities of reducing the response burden, found that the possibility to integrate the data from the company's accounting information system into other information systems would significantly reduce the response burden for companies and facilitate the data collection process in public institutions.
The developed conceptual model for reducing the response burden has made it possible to understand how the response burden on companies can be reduced through the data integration process.

3. Based on the developed conceptual model, a methodology for reducing the response burden based on AIS data integration has been developed. After examining the possibility of integrating the data of the SAF-T system into the structure of the statistical report, four stages of the empirical research methodology to improve the reduction of the response burden were presented.

4. The study was conducted in four stages. The analysis of the possibility of data integration was carried out following a case study, which showed that in most cases the indicators from the SAF-T files and the statistical report are compatible. The response burden reduction model was developed by integrating numerical values from the relevant indicators from the SAF-T file into the relevant indicators from the statistical report. In order to put this model into practice, recommendations and suggestions for beneficial stakeholders were provided.

Tumėnienė Renata. “Atskaitomybės naštos mažinimas taikant apskaitos informacinės sistemos duomenų integravimą”. Magistro baigiamasis projektas / vadovė doc. dr. Viktorija Varaniūtė; Kauno technologijos universitetas, Ekonomikos ir verslo fakultetas.

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**Santrauka**

Kiekviena įmonė daugiau ar mažiau yra susidūrusi su atskaitomybės našta, kuri atsiranda dėl įsipareigojimų teikti ataskaitas įvairioms institucijoms, tokioms kaip Valstybinė mokesčių inspekcija, Registrų centras ar Lietuvos statistikos departamentas. Teikiamų ataskaitų įvairovė yra didžiulė ir našta susijusi su duomenų paruošimu konkrečioms ataskaitoms teikti atima iš įmonių daug brangaus laiko. Bene didžiausią atskaitomybės naštą įmonėms sukuria Lietuvos statistikos departamentas, reikalaudamas įmonių pateikti daug įvairios informacijos. Neretai, įmonių pateikta informacija Statistikos departamentui dubliuojasi su informacija pateikta kitoms įstaigoms. Todėl šiame darbe yra nagrinėjama būtent statistinės atskaitomybės našta. Šiais technologijų laikais daug yra sukuriama duomenų, kuriuos būtų galima panaudoti statistinės atskaitomybės naštos mažinimui. Užuot rinkus informaciją iš įmonių tiesiogiai, būtų galima pasinaudoti jau esamais administracinių šaltinių duomenimis ir juos integruoti į statistines ataskaitas, tokiu būdu mažinant įmonėms statistinės atskaitomybės naštą.

Pagrindinė šio darbo problema keliama klausimu: kaip pagerinti naštos mažinimą įmonėms integruojant apskaitos informacinių sistemų duomenis?

Darbo objektas - atskaitomybės naštos mažinimas įmonėms, kurios privalo Lietuvos statistikos departamentui pateikti statistines ataskaitas, sudarytas remiantis apskaitos duomenimis.

Darbo tikslas - pasiūlyti atskaitomybės naštos mažinimo modelį, integruojant įmonių apskaitos informacinės sistemos duomenis į statistinę ataskaitą.

Darbo metodai - mokslinės literatūros analizė, kuri naudojama mokslinės problemos analizei ir konceptualaus modelio teoriniam pagrindimui, ir pusiau struktūruotas interviu (anketinė apklausa), atvejo analizė ir lyginamosios analizės metodai, naudojami modeliui išbandyti praktiniame pritaikyme.

Įgyvendinimus darbo tikslą, prieita prie sekančių išvadų:

1. Atskaitomybės naštos mažinimo problemos analizė leido iš įvairių perspektyvų atskleisti ir suprasti pačios atskaitomybės naštos sąvoką. Pagrindinė atskaitomybės naštos mažinimo idėja buvo duomenų rinkimo proceso automatizavimas integruojant duomenis iš vienos sistemos į kitą. Problemos analizė parodė, kad trūksta informacijos, kaip integruoti apskaitos informacinių sistemų duomenis į statistinius klausimynus, naudojant duomenų standartizavimo priemones. Taigi tai dar kartą parodė, kad problema yra aktuali ir ją galima nagrinėti išsamiau.

2. Išnagrinėjus teorinius duomenų integravimo aspektus, glaudžiai susijusius su atskaitomybės naštos mažinimo galimybėmis, nustatyta, kad galimybė integruoti įmonės apskaitos informacinės sistemos duomenis į kitas informacines sistemas žymiai sumažintų įmonės atskaitomybės naštą ir palengvintų duomenų rinkimo procesą valstybinėse įstaigose.
   Sukurtas konceptualus atskaitomybės naštos mažinimo modelis leido suprasti, kaip per duomenų integravimo procesą galima sumažinti įmonėms tenkančią atskaitomybės naštą.

3. Remiantis sudarytu konceptualiu modeliu, buvo sukurta atskaitomybės naštos mažinimo AIS atžvilgiu metodika. Išnagrinėjus galimybę integruoti SAF-T sistemos duomenis į statistinės ataskaitos struktūrą, buvo pateikti keturi empirinių tyrimų metodikos, skirtos pagerinti atskaitomybės naštos mažinimą, etapai.

4. Tyrimas buvo atliktas keturiais etapais. Duomenų integravimo galimybės analizė buvo atlikta atlikus atvejo analizę, kuri įrodė, kad daugeliu atvejų rodikliai iš SAF-T failų ir statistinės ataskaitos yra suderinami. Atskaitomybės naštos mažinimo modelis buvo sukurtas integruojant skaitines reikšmes iš atitinkamų rodiklių iš SAF-T rinkmenos į atitinkamus rodiklius iš statistinės ataskaitos. Siekiant pritaikyti šį modelį praktikoje, buvo pateiktos rekomendacijos ir pasiūlymai, skirti suinteresuotoms šalims.

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## List of abbreviations and terms

**Abbreviations:**

SDMX – Statistical Data and Metadata eXchange;

S2S – System to system;

H2S – Human to system;

NSI – National Statistical Institute;

OECD – The Organisation for Economic Co-operation and Development

XML – Extensible Markup Language;

XBRL – eXtensible Business Reporting Language;

SAF-T – Standard Audit File for Tax.

**Terms:**

**Administrative data sources** – The data collected by sources external to statistical offices (*Metadata terminology* 2000 [Pdf]).

## Introduction

**The relevance of the topic.** Recently, public authorities have been looking for ways to reduce the response burden for companies. At the same time companies are looking at how to improve their accounting information systems in order to simplify data submission to public authorities such as Tax administration authority, Centre of Registers, National statistical institutes, Customs department and other public authorities for which they have an obligation to produce a lot of various tax and accounting data. Not surprising that requested information usually repeats for a number of different public authorities or even for the same authority, such as National statistical institutes (NSIs). Indeed, NSIs gathers from companies a lot of various information, and usually the same information which can be gathered from administrative data sources repeats in different statistical questionnaires and this causes the response burden. If the company is small or medium (less than 250 employees) in that case its response burden is much lower than for big companies (more than 250 employees) as big companies for NSIs must provide much more statistical questionnaires than small or medium companies. That's why the relevance of the selected topic is very important nowadays. In this technological age, a lot of new administrative data sources are created which can be used in NSIs instead of gathering information from companies directly.

Recent articles (Liken & et al., 2018, Xu & et al., 2019) on tax burden reduction deal with issues such as tax simplification to reduce the tax burden on companies as well as the problems which companies are facing when they dealing with the government institutions, mainly with tax authorities. While the other authors (Kocsis, 2019) who research on Accounting Information System (AIS), their researches are about the AIS as the system itself, about the relation between unstructured data with accounting function and about the accounting data integration using XBRL which help companies to provide specific reports to other members of the company group (Li & et al., 2018). Part of the authors of scientific articles (Arendsen & et al., 2014, Bavdaž & et al., 2015, Buiten & et al., 2016, Sisto & et al., 2016) about response burden for companies who must fill in statistical questionnaires, analyzes the problem of response burden reduction in a wide context. This requires a lot of structural changes in the statistical production processes, especially in the data gathering process, within the NSI itself.

The scientific literature (Xu & et al., Kocsis, 2019, Liken & et al., Li & et al., 2018) lacks management approaches to assess the status of application of response burden reduction in business management solutions and to identify opportunities and areas for improvement the response burden reduction. The lack of models and methods in the scientific literature confirms the importance and problematic nature of the study.

**The main problem** is how to improve the response burden reduction for companies by integrating data of Accounting Information Systems?

**The object of the work** is an improvement of the response burden reduction for companies which must provide statistical reports for National statistical institute based on accounting data.

**The aim of the work** is to propose a model for response burden reduction by integrating companies' data of Accounting Information System into a statistical report.

**The objectives of the work** in order to reach the aim are:

1. To reveal the application problem of response burden reduction in business solutions;
2. To propose and implement a conceptual model for response burden reduction improvement;
3. To prepare a methodology of empirical research for response burden reduction improvement;

4. To conduct an empirical study of the proposed response burden reduction improvement model and to provide a suggestions or make recommendations for further improvements.

**The methods of the work** are scientific literature analysis which is used for the analysis of a scientific problem and theoretical justification of the conceptual model, and semi-structured interview (questionnaire survey), case study, and benchmarking methods which are used to test the model in practice.

# 1. Problem analysis of response burden and its reduction possibilities through the integration of AIS data

Year by year companies must provide data not only to their stakeholders but also to various public institutions. The volume of information provided is increasing every year, at the same time the burden on preparing the data for the necessary institutions increases as well. That's why the question of facilitating the burden for companies is very relevant. There is a lot of discussion on this issue in various scientific articles, which distinguish three main aspects on the burden. Firstly, the response burden is analyzed as the concept itself. Secondly, the data integration of various information systems is reviewd and thirdly, the possibility of reducing the burden itself is investigated.

## 1.1. The concept of response burden

As Bavdaž, Giesen, Černe, Löfgren, & Raymond-Blaess (2015) noticed that no matter how long response burden exists and how relevant it is, still this concept is not clear enough. From the point of view of politicians, this can be seen as a common cost for companies. From a manager point of view, response burden may be a time that is taken away from companies and which could be used to perform other tasks. The methodologist has experienced the feeling when companies have to fill in questionnaires, but the quality of the data provided is not the best due to big response burden.

The response burden concept in a wide sense is understood as an obligation for companies to provide data for other institutions. According to Nielsen, Carvalho, Veiga, & Barbosa (2017) first of all response burden is a cost incurred by companies in order to comply with law regulations to provide data. Public authorities regulate companies by laws to provide information for various needs. For example, Tax authority requires companies to provide them information on corporate income tax, value added tax and other important information which is necessary to ensure that all taxes to the budget are paid. Another example is National Statistical Institutes which requires from companies a lot of information in order to prepare information on macro level and also for decision making.

Authors Arendsen, Peters, Hedde, & Dijk (2014) believe that the biggest part of the burden on companies comes from the obligation to provide information. Companies allocate huge resources to provide administrative data, which is a major obstacle to economic growth. "The total administrative burden on businesses within the European Union has been estimated at approximately 600 billion euros per year, varying from 1.5% of GDP in the UK and Sweden to 6.8% of GDP in Hungary, Greece and the Baltic States (Undheim, 2007)" (Arendsen, Peters, Hedde & Dijk, (2014), p. 160). It is really a huge cost for companies which could be directed to economic growth.

Giesen, Vella, Brady, Brown, Ravindra, & Vaasen-Otten (2018) refer to the response burden for large companies which has to provide data for a big amount of statistical surveys and must do it regularly every year. As big companies spend a lot of time for fulfilling the questionnaires in this respect statistical reporting is a burden on companies. High level of response burden is related with the collected data quality and timeliness.

Response burden is a big issue for NSIs due to three main issues. First of all, it is an issue for political reasons as the government institutions enforce companies by legislation to provide data for NSIs. It reduces competitiveness of companies because they employ their resources inefficiently. Second issue is due to methodology. Excessive burden can lead to unpredictable survey behavior, which will result in poor data quality, because excessive burden can have many unanswered responses, or those responses may delay

significantly, as well as measurement errors can arise. The third issue is related to strategic reasons in terms of relations between NSIs and companies. Companies are very important for NSIs as they are not only providing data, but also, they are users of official statistics data and according to these data they make decisions concerning their business (Bavdaž et al., 2015). The same authors distinguish two types of response burden, objective and subjective. Objective response burden means an actual response burden and it is measured by the time or money which is necessary to fulfill the data requests. Subjective response burden means perceived response burden and is referred to the companies' evaluation on how complicated is the request to fill in requested data. They also separate response burden concept to the concept as itself and classifies the concept into more narrow concepts as gross burden, net burden, minimalistic burden, maximalistic burden, imposed burden, accepted burden.

In other authors (Veiga, Janowski, & Barbosa, 2016) article response burden is considered as administrative burden and is related to a policy problem. Theses authors considers burden from government side, its readiness to solve this problem, what measure to adopt in order to have an effective tool for dealing with administrative burden. According to Veiga et al., (2016) administrative burden is considered in a more wide sense that is not only costs of obligation to provide data, but it is also a cost referring to learning and psychological things that companies face with the government while communicating with it. Learning costs are related to the search process to obtain information about public services and to determine if they are relevant to the person. Psychological costs are related to participation in unpopular programs.

The Department of Statistics of Lithuania provides some facts about burden reduction. In the 2018 Annual Activity Report on Reducing the Statistical Response Burden on Respondents and Strengthening Responses to Respondents states that one of the strategic objectives is to increase the efficiency of the production and dissemination of statistical information. Statistics must be produced in a rational way using all possible data resources and not increasing the statistical reporting burden on respondents. The data required for the production of official statistics have to be collected from companies only when they are not available in the administrative database or if they are too late to collect and cannot, therefore, be used for statistical purposes. Measures such as actualization of statistical reports, their comprehensibility, clarity, and simplification make possible to shorten the time taken to complete statistical reports. This report states that in 2018 one company spent 7.7 hours on average for completing statistical reports (Fig. 1.). Despite the fact that on average, one respondent completed 9.9 statistical reports (Fig. 2.), a particular focus is on small businesses, ensuring that the smallest enterprises (0-4 employees; income not exceeding EUR 150,000) participate in no more than 3 statistical surveys (Kavaliauskienė, 2018).

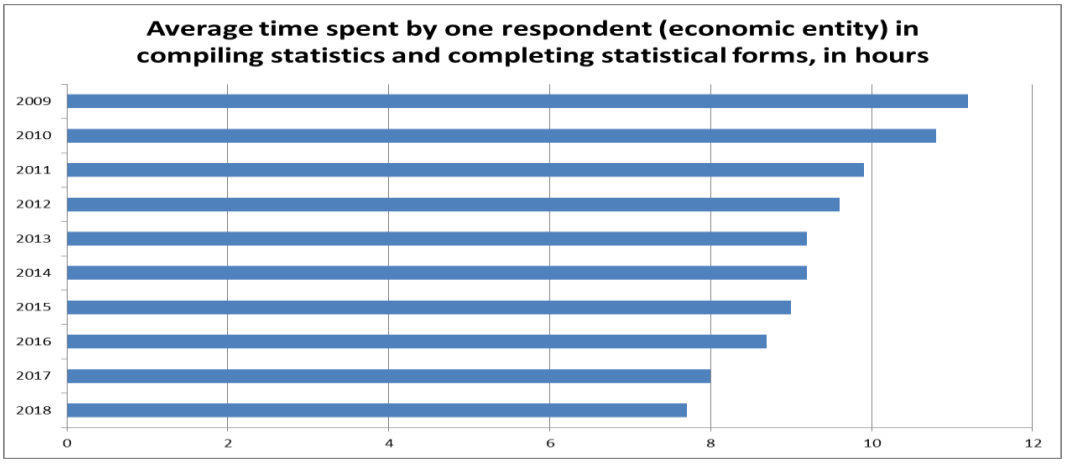


**Fig. 1.** Average hours spent by one respondent to fill in statistical questionnaire (adapted from Kavaliauskienė, 2018)

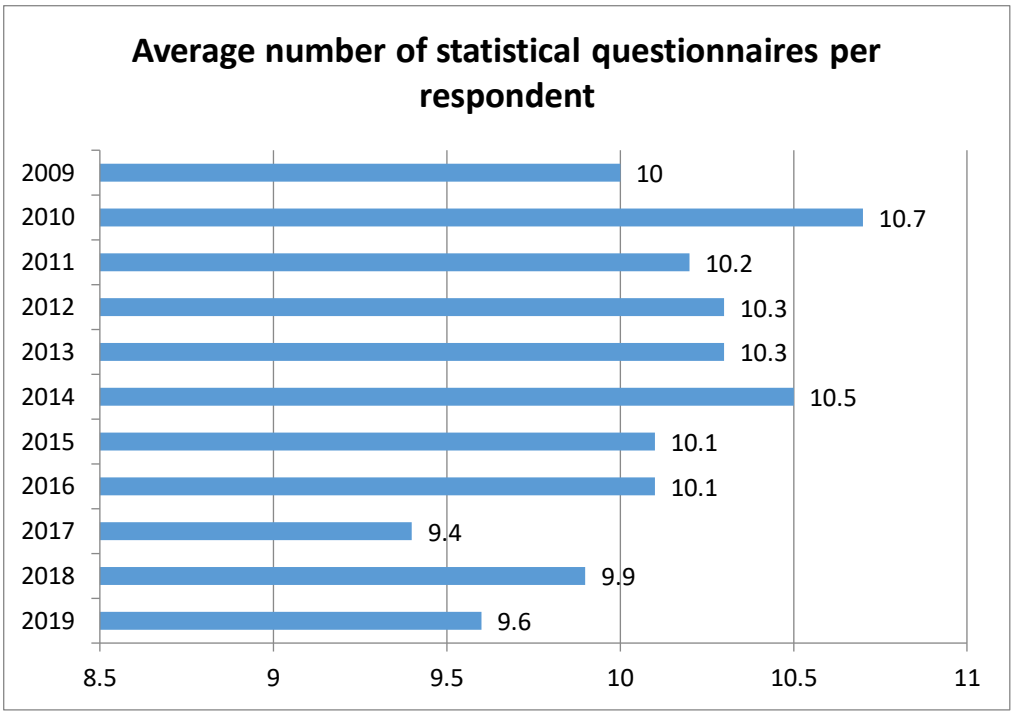


**Fig. 2.** Average number of statistical questionnaires per one respondent (adapted from Kavaliauskienė, 2018)

In summary, the concept of response burden is confusing enough, because it covers many aspects. The most important aspects related to response burden are costs, volume, time and data quality. The more time is spent on providing data to certain authorities the more costs it creates to companies. At the same time, if the data which is needed for certain authorities is complicated for the company to provide, the quality of those data can be a big issue. However, quite a big response burden for companies create National Statistical Institutes, because the same information which is provided to other authorities is required from NSIs and it creates an additional burden on companies. Response burden is also affected by the length and complexity of the questionnaire itself. The longer and more complex the questionnaire, the greater the burden on businesses. Thus, in order to reduce the response burden, not only should alternative sources of administrative data be sought, but statistical questionnaires should be combined to be clear with well-defined questions. Information already provided to other authorities should not be duplicated in the statistical questionnaires. Only then the burden reduction will be realistic and beneficial for businesses. It is worth to mention that response burden can be reduced by integrating data of other administrative data sources into statistical questionnaires. Data integration would allow to create new data sources for filling in the statistical questionnaires.

### 1.2. Data integration

Data integration is closely related to response burden and its reduction possibilities. Since all companies have Accounting Information System (AIS), it can be explored in more detail, in terms of how the data of AIS could be integrated into other systems in order to reduce the response burden. In general, AIS is such a system that collects stores and processes the financial and accounting data which is used by internal users to produce information to stakeholders.

According to Butkevičius (2009) research which was devoted to investigate AIS integration models in Lithuania for small and medium companies, the results showed that extent to which companies are ready to integrate their AIS data with state institutions remains law although in certain cases the necessary conditions for integration was ensured. The main obstacles of data integration into external systems are the rigidity of

software, the lack of use of information technology and the need for large investments. In order to promote data integration into systems, the system itself should be easily adaptable and up-to-date. The same author investigates three widely used models of external business process integration, that is Business-to-Business (B2B), Business-to-Government (B2G) and Business-to-consumers (B2C). According to the author, B2G is one of the most important model of the Accounting Information System due to quantity and importance of data which is needed to provide for governmental institutions. As Butkevičius (2009) states there are five state institutions for which the companies provide data most often:

- State Social Insurance Fund Board for which companies prepares reports by using computerized accounting and payroll systems;
- State Tax Inspectorate for which companies can submit tax returns by Electronic Declaration System;
- Register of Legal Entities for which companies are legally obliged to provide data of financial statements;
- Department of Statistics Lithuania where statistical reports from companies are collected;
- Department of Customs collects from companies data on foreign trade.

The provision of all these services is called e-Government and the complexity of these services depends on the state institutions how they are prepared for electronic data integration. Meanwhile as the Butkevičius (2009) points out, that small and medium companies of Lithuania are not prepared for external system integration or the level of integration is very law due to the main reason, that automation of the data submission process would not help for refusing manual work and the investments would not pay off in short term.

A progress in the field of data integration has been made by a Portuguese (David, Abreu & Carreira, 2014) on a Simplified Business information (SBI) system through which data of accounting and tax at the same time are provided for four external users: Commercial Registry of the Ministry of Justice; Ministry of Finances and Public Administration; National Statistics Institute and Portuguese Central Bank. SBI is an innovative way for companies to provide accounting and tax information to public bodies online. According to the literature of information systems, this data delivery system has four advantages. First of all, it exploits the competitive advantages of companies. Secondly, it develops new creative environments for accounting and tax information. Third, it exploits direct and indirect management resources and fourth, it coordinates investments and costs with companies' objectives. The main points of success of such a data integration system are a support from political side, a very good cooperation with companies which are involved in the system creation process. An important fact is that statistical Institute of Portugal commits to companies to gather data for statistical purpose only once. All these facts lead to better data quality and a much easier way to provide the data and at the same time for external users to receive the data.

Arendsen et al., (2014) states that the so-called electronic integration effect when data can be transferred among systems automatically and supports organizational process coordination significantly reduces costs for companies to transform data to other organizations. It means that some efforts must be made to make data integration systems accessible to both companies and public authorities. That costs which can be saved in order to prepare and transmit data would be redirected towards economic growth and would reduce the administrative burden on companies. The same authors highlight that to successfully implement the benefit mentioned above, electronic data integration must be compatible with the company's management systems.

Buiten, Boom, Roos & Snijkers (2016) suggested automated financial data collection method for business statistics. It means that data production process from the beginning when data, which comes to NSIs to the

end when data are disseminated, has to be automated and integrated in the chain. Companies are carrying out activities which generate a lot of data flows on financial results, reports, data for taxes and so on. These data flows pass certain processes. First of all, data fall into bookkeeping process where all transactions are coded. Then comes data classification process where data from bookkeeping are classified into financial accounting statements. After classification there is a reporting process where data needed for different reports are extracted and produced for various users like tax authorities, chamber of commerce and so on. These users have their own processes where they use the data gathered from companies' reports. And at the end of this chain there is a NSIs which gets data from companies through statistical questionnaires and from administrative data sources and integrates it into one statistical production process (Fig. 3).

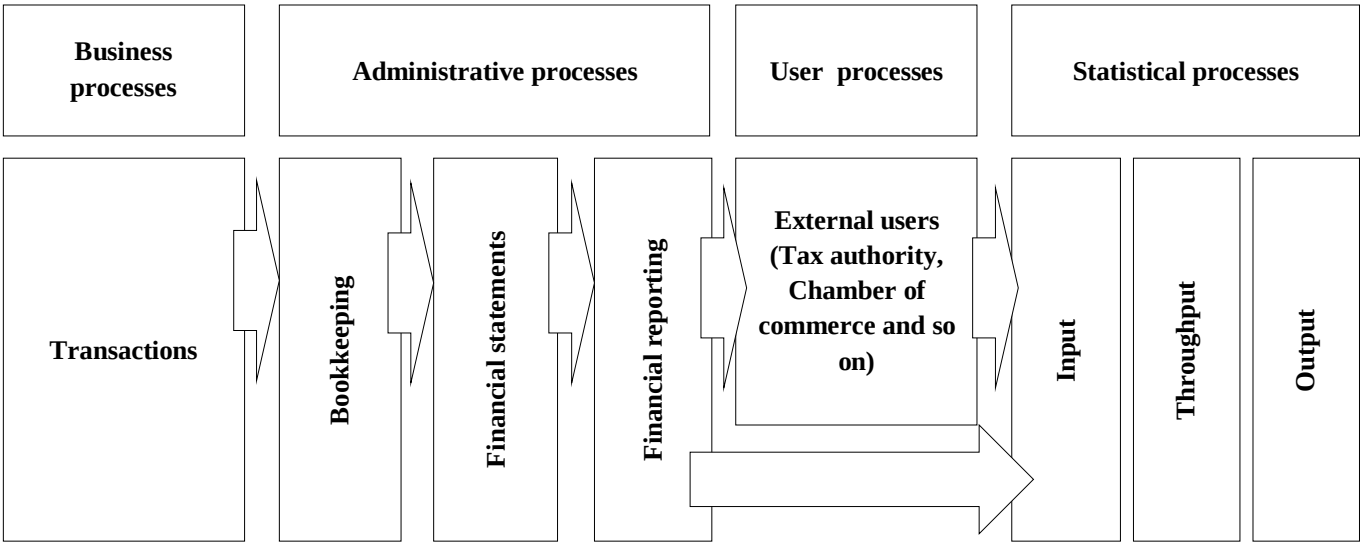


**Fig. 3.** The chain of administrative processes (adapted from Buiten et al., 2016)

According to the same authors Buiten et al., (2016) to manage this entire network where a lot of players are involved a lot of efforts have to be made. The major effort must be put on standardization of data and concepts in order to integrate financial data of companies into statistical production process which would significantly reduce response burden for companies.

Grover, Chiang, Liang & Zhang (2018) gives an opinion that data integration from different sources have greater benefits. When making various decisions, data is like an input that helps to generate insights. Data integration requires to have the right information systems, various analytical tools to gain valuable insights from the data and use them for decision making. Information systems should be able to collect and integrate various data sources. The integration of data from different sources must address the security issue. According to Grover et al., (2018) having good big data analytical skills, we can talk about value creation to the company when data from different sources are integrated and meaningful insights are drawn. It means that organizational value is related to the ability to integrate various data sources, and value creation with the ability to integrate external databases with internal ones.

Barcaroli, Nurra, Salamone, Scannapieco, Scarnò & Summa (2015) states that Big data can replace traditional statistical surveys to reduce the burden on respondents. Integration of data from external databases or sources aims to increase the accuracy of estimates. According to the Barcaroli et al., (2015) data integration process has an advantage that it makes the process transparent, as it avoids human misunderstanding of the statistical questionnaire items and its definitions. Another benefit is that the same period of traditional survey can be repeated for all automatic data collection.

The ability to integrate company's AIS data into other information systems would significantly reduce the response burden for the company and facilitate data gathering process for the government institutions. Data integration process from one system to another system is quite complicated and requires a lot of effort, human resources, knowledge and skills to manage this process. Comparing the ability of small and medium companies with big companies to prepare systems for data integration into external systems is very unequal. Big companies have more resources to apply data integration techniques than small or medium companies. For big companies' investments in this process would payoff, however, it is not known whether such costs would pay off for small companies. However, it is obvious that data integration systems would facilitate data gathering process for governmental institutions, as these institutions create for companies an obligation to provide to them the certain amount of various data. A big amount of data is gathered from companies accounting information systems. Most of the time this information duplicates the information provided to National Statistical Institutes and to Tax authorities which increases the burden for companies. Deploying the data integration process into governmental institutions would significantly reduce the response burden for the companies and would make the data gathering process easier. Another important aspect of data integration is that integrating data from multiple sources will not only reduce the burden on companies but will also provide a complete picture of the survey as the data will be collected from the entire population.

### 1.3. Response burden reduction

Increasing demand of various types of data increases response burden. It is important to take measures for response burden reduction and seek that data would be produced once. Whereas National Statistical Institutes create an additional response burden for companies, as they often ask for data that already have been provided to other public authorities, it is worthwhile to consider response burden reduction possibilities more closely from the NSIs point of view.

Braaksma & Zeelenberg (2014) describes modernization programs for statistical production processes in Netherlands Statistics. Due to several main causes like response burden reduction and timeliness and also of budget cuts for NSIs the need to redesign the statistical data production process in a more reliable way in terms of information management is a strategic goal for NSIs. The need to redesign the data collection process integrating into this process as many as possible administrative data sources would lead to response burden reduction because companies wouldn‘t have to produce the same data for NSIs as they produce it to other public authorities. But this kind of modernization leads to that NSIs would have to reorganize internal processes in order to be able to integrate data from other institutions. It is all about the possibilities how the data of AIS will be transformed and transferred in order to use it. For this purpose, data must be standardized using appropriate standardization tools and languages.

Sisto, Eskelinen & Laurila (2016) considers an important aspect of response burden reduction. They discuss about centralized administrative data collection system which is developed in Finland statistics. The idea of this system is to collect data from other data providers in order to reduce response burden for companies. For this reason, they created a team who cooperates with data providers in order to get a good quality administrative data.

To reduce response burden, data collection process must be automated in continuous data manage chain. Whereas data collection proces many years ago was limited to paper-based questionnaires and was a huge burden for companies, especially for big ones. Although the volume of requested data was not as big as it is now. But with the quick development of information technologies, new systems for automated data collection are being developed, which reduces the burden on companies because they can provide partially filled in questionnaires or do not provide the data at all because the data can be collected automatically from

one system to another. The idea is to take data from companies accounting systems and from other administrative data sources and integrate them into statistical production chain (Fig. 4).

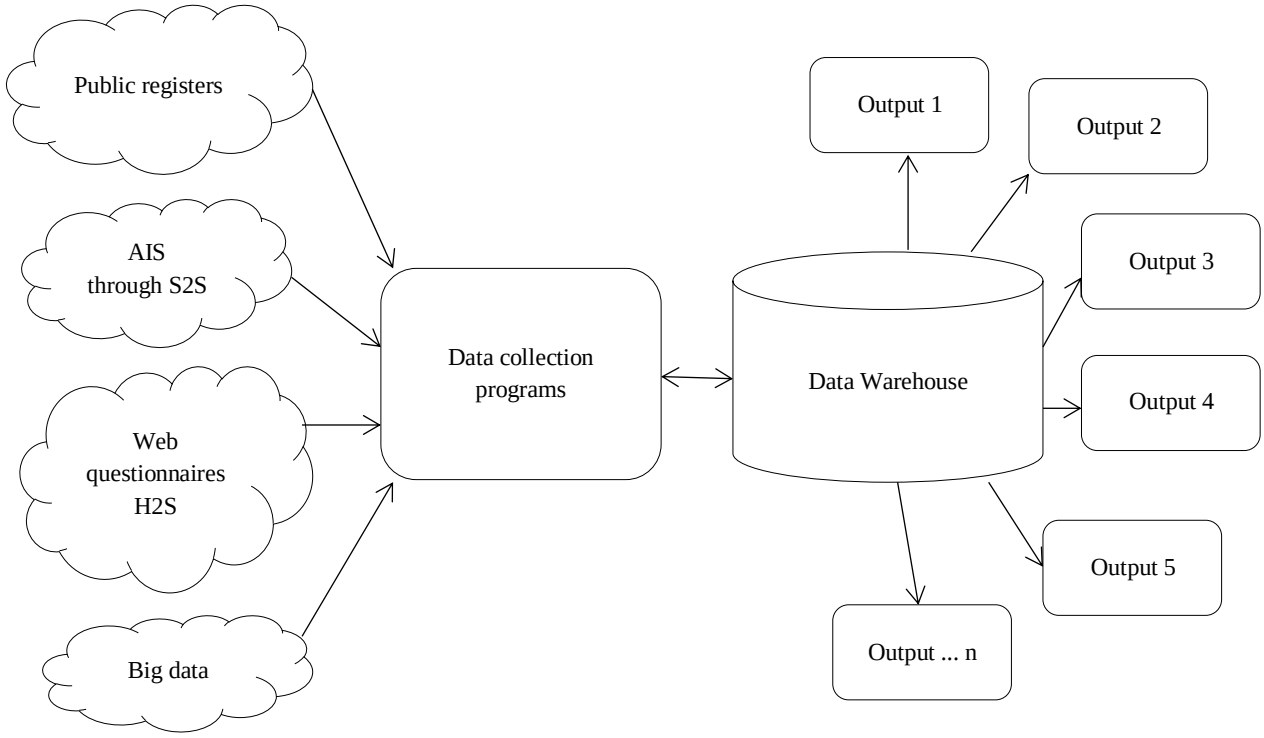


**Fig. 4.** Automatization of statistical production chain (adopted from Buiten et al., 2018)

To implement such mechanism the technical standardization of data, harmonization of concepts between data providers and data recipients is required. There are three main well-known and widely accepted standards – XML, XBRL, and SAF-T. Most countries are using XBRL Standard to Exchange accounting and financial information (Buiten, Snijkers, Saraiva, Erikson, Erikson & Born, 2018).

According to Bharosa, Winne, Wijk & Janssen (2012) new technologies have an impact on how the information is provided from B2G. Public authorities request from companies to comply with laws and to report data for them. As the requirements for regulatory purpose grow every year together grow the amount of reporting data for companies. There are no unique rules and formats for data reporting to government agencies, therefore, companies often provide the same data several times to different agencies and this costs money for companies and raises burden. Bharosa, et al., (2012) for response burden reduction suggests Lean approach because other methods would cost a lot of investments and changes in the overall statistical production process for government agencies. "A lean government does more tasks with fewer resources by means of standardization of processes, data and the collective IT-infrastructure… However, a major challenge in realizing lean government is the lack of data standards for exchanging business and financial information among governments and businesses." (Bharosa, et al., (2012), p. 26). According to author's opinion in order to reduce response burden for companies, data which must be provided to public authorities has to be collected in electronic way and must be standardized. For data standardization they propose to use XBRL Standard. The biggest concern in implementing the XBRL standard is that it is not mandatory.

From a company point of view according to Eierle, Ojala & Penttinen (2014) having applied an XBRL standard, time for preparing reports for internal users has shortened from two weeks to about an hour as well as the preparation of financial statements reduced from five working days to about half an hour.

For NSIs and other public authorities, there is enforcement to reduce the response burden for companies by simplifying the process of statistical questionnaires filling. Nowadays, paper questionnaires are transformed into electronic ones, but still, they have to be filled manually. Dealing with this challenge, Statistics Sweden proposed to import data from companies accounting systems into the online questionnaires. That leads to response burden reduction. But on the other side, it demanded changes that lead to new ways of how data from companies are required. Cooperating with Tax Authority and Centre of Registers, Statistics Sweden run the project which purpose was to reuse financial information. According to authors in order to reduce the burden for companies dramatically it is needed to change the data collection process from Human-to-System (H2S) to System-to-System (S2S) (Erikson, Erikson & Hertzman, 2016).

Analysis of scientific articles reveal that the response burden is analyzed from various aspects, and it showed the importance of response burden reduction. There are different methods and ways of how response burden can be reduced for companies. Analysis of the problem showed that burden reduction by making a lot of structural changes, both in public organizations and in companies, requires a lot of investment. These changes lead to the need to implement complicated data integration systems. Not all companies and government authorities are ready to invest in these changes. So, it is needed to find easier and less costly ways to reduce burden. Great attention is paid to reduce the burden for companies who provide statistical reports to NSIs and especially when provided information is repeated in other administrative data sources from the government companies. Large companies have more burden than small ones because they have to produce for NSIs more statistical questionnaires as their impact on macroeconomics is bigger. The main idea of response burden reduction is the automation of data gathering process by integrating data from one system to another system. However, it is lack of information on how to integrate data from accounting information systems into statistical questionnaires using data standardization tools.

## 2. Theoretical solutions for response burden reduction through the integration of AIS data

Analysis of the problem showed that the response burden for companies is essential and it has to be reduced by finding possibilities to gather data from companies using other available data sources that exist in other institutions. Public authorities must focus on this issue and improve the process of collecting data from companies in order to reduce the response burden for them. One of the solutions to reduce the response burden would be to integrate data from the accounting information system into the statistical data processing process using data standardization tools by exchanging the information with institutions who gather accounting data. This section will review the theoretical possibilities for reducing the response burden through the data integration process. First, the concept of AIS and its relation to digitalization will be reviewed. The theoretical possibilities of digitalization will be explored, and finally, the relationship between AIS, digitalization and other administrative data sources including Big data, will be examined.

### 2.1. AIS and its change in the context of digitalization

Accounting information nowadays is not imaginable without digitalization processes which helps a lot for accountants and financial specialists to get the needed information quickly and without big efforts. This is served by accounting information systems that facilitate the daily work of accountants working with financial information. It is also crucial to manage big data flows and provide information to managers in a clear and understandable way to make the right business decisions. In cojunction, it is important to understand what is accounting information systems (AIS), what is digitalization and how AIS relates with the digitalization in terms of big data and other administrative data sources.

**The concept of AIS.** At all times, accounting information has been and continues to be the foundation for the efficient development of the company. Modern organizations are unimaginable without computerized accounting systems. Nowadays technology is so advanced that accounting for a business has become much easier and simpler to manage than ever before. Both the AIS domain and the Information Systems (IS) domain are closely related and at the same time are quite broad topics. With the development and improvement of information systems, the accounting of companies has changed considerably over the years. Companies in the 21st century are facing new accounting challenges such as information security, big data processing, knowledge management, cloud and more (Kocsis, 2019). Thus, in agreement with the author's view that AIS has gained tremendous momentum with the development of new technologies, it is worth mentioning that the variety of accounting information systems itself today is vast. Unfortunately, there is no unified standardized accounting system for all companies and organizations, that could reduce the misinterpretation of data in accounting systems.

According to Kurniawan, Karsen, Adiprasetyo, Juwitasary & Tapia (2017) “accounting is the system to measure financial performance from the company by grouping many kind of transactions such as sales, purchases, assets, and liabilities in standard format” (Kurniawan et al., (2017), p.2). While Fontinelle (2019) describes AIS as “a structure that a business uses to collect, store, manage, process, retrieve and report its financial data so it can be used by accountants, consultants, business analysts, managers, chief financial officers (CFOs), auditors, regulators, and tax agencies” (Fontinelle, (2019), p.1). Bendovschi (2015) states that AIS is “to collect and record information regarding transactions or events with economic impact upon the company, as well as to process and provide relevant, fair information to stakeholders (both internal and external)” (Bendovschi, (2015), p.2). According to Kumar (2018) accounting is described as a service that provides quantitative information related to the activities of the company, which is then used to make important decisions in the development of the business and, most importantly, to base those decisions on real numbers. The author’s meaningful remark about accounting is that the accounting system itself does

not create wealth, but if an accounting system can generate useful information for other users, then at the same time it can help create that wealth and, most importantly, maintain it properly. According to the author, accounting is considered a business language designed to convey business information. The accounting system, whatever it may be, has its own clear structure, based on certain rules according to business accounting standards and with appropriate symbols. In summary, AIS is a system capable to process the collected accounting data by structuring various types of transactions into different groups, storing them and make useful analyses, and presenting data in a convenient way to decision-makers of various sections. The general model of accounting information systems is shown in figure 5. In addition to the authors' opinion on AIS, it is important to note that having reliable accounting information systems can provide correct financial performance analyzes that will enable managers and other decision-makers to make appropriate and relevant decisions about the company's operations and future management strategies.

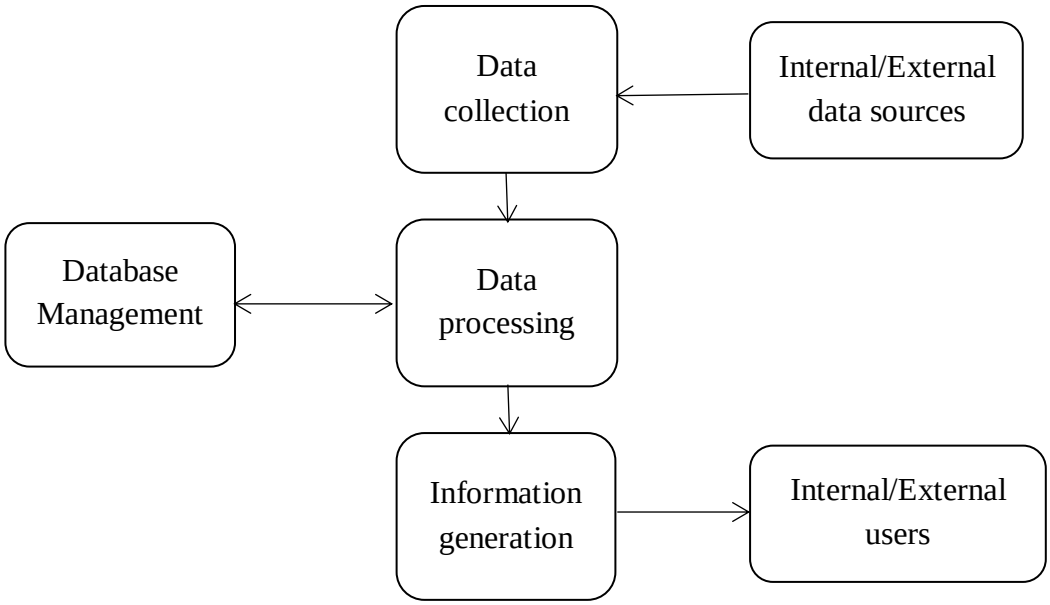


**Fig. 5.** The general model of accounting information systems (adopted from https://slideplayer.com/slide/8096940/)

Naturally, in response to market supply, three main types of accounting services have been formed. The first one is a local accounting information system, which is purchased by the company and adopted for its own infrastructure. The second one, when accounting services are performed remotely. In this case, the accounting process is managed by the third party according to the signed agreement, but the accounting program itself is installed at the company. And the last one is related to cloud computing services where all the accounting data are managed in virtual platforms by the third party (Bendovschi, 2015). As technology evolves, most service providers are developing the most innovative accounting systems available and offering state-of-the-art solutions based on new technologies through the acquisition of accounting, document processing and business intelligence services. This means that the supply of services in accounting systems is increasing. When developing such services separately and without standardizing accounting data, other public bodies that collect accounting data for control or statistical purposes face different interpretations of the data provided. When a company submits a financial report to the Tax authorities and, for example, submits the financial data to the statistical institution, the interpretation of the data in each report may differ. This is because different accounting programs store data differently, and in the absence of a tool that standardizes accounting data into a single system, there is scope for different interpretations of

the same data. As a result, institutions processing information at the macro level can cause it to be distorted and untrue.

Any automated system essentially helps to optimize day-to-day operations. The AIS, which helps managers get the financial information they need quickly to make strategic decisions, is no exception. Accounting information systems increase the work efficiency of accountants, reliability of information, reduce the risk of error and helps to control and monitor the financial data. It helps to carry out vertical and horizontal financial analysis very quickly and accurately. According to Kurniawan et al., (2017) implementation of "accounting information systems can contribute to help reconcile and collect data and information that can give the economic impact and intangible benefits on the organization" (Kurniawan et al., (2017), p.1). Moreover, AIS helps to rise an employee's productivity in terms of efficiency and risk of error minimization. The main function of AIS is to represent the quantitative value of a company's past, present and future economic events. AIS is used to prepare financial statements such as balance sheet, income statement, cash flow and changes in capital. AIS processes the data entered into the system and converts it into accounting information that can be used by company managers. Tracking transactions through AIS is much easier, as the manager has the right to access information anywhere, anytime through a unified AIS (Kurniawan et al., 2017). Thus, with the increasing number of companies using accounting software to improve work efficiency, the accounting system must be evaluated in parallel. Before implementing accounting information systems, companies should consider what problems they might encounter with AIS. How efficiently the AIS would be used and what information the system users would need, how it would be presented for further analysis, what form and etc.. Subsequently, the design of the accounting system itself should clearly list all the requirements for that system, taking into account the principles of data compatibility, protection, and control.

Kurniawan et al., (2017) states that “Accounting can help to evaluate company past performance, present condition, and predict company’s future performance.” (Kurniawan et al., (2017), p.2). Bendovschi (2015) declares that “the accounting system is thus essential in providing reliable, relevant, significant and useful information for the users of financial data” (Bendovschi, (2015), p.2). The main benefit of AIS is to provide a true picture of the company’s activity for various stakeholders and shareholders. Accounting information is needed to prepare financial statements, it greatly facilitates companies for developing long-term strategic plans to survive in a highly competitive and dynamic environment (Mitrović & Knežević, 2018). With AIS, companies ensure that ongoing processes are managed correctly, that processes are as simple as the maintenance and analysis of the financial information which is vital for good decision making (Kurniawan et al., 2017). A good AIS facilitates analyst work, gives real-time information to related parties, and helps manage financial processes and make the right decisions within the company. In addition to the views expressed by the authors, it is a matter of appreciation that all accounting programs perform standard basic accounting functions that allow access to various financial statements, accounting for purchases, sales and inventories, and completing and printing various payment documents. When reviewing the accounting system modules and evaluating what the AIS can do, it is important to look at whether AIS supports forecasting, modeling, and other modules that allow for companies to predict the financial position of a company in the future, rather than simply gathering information about the past and present. It is also important that AIS is flexible from a company perspective. For example, when a company starts a new business in the future, managers would not have to look for a new AIS but would be able to supplement the existing AIS with the necessary modules. In summary, combining computerized accounting systems with other information systems would allow accounting to be conducted and controlled much faster, better quality and in a more convenient way.

As technology evolved, various types of Accounting Information Systems were developed to meet different needs according to the size of the company, the volume of data the company is generating and other factors. However, the rapidly evolving field of accounting information systems also presents certain challenges for companies. Bendovschi (2015) distinguishes three main points of challenges, that is confidentiality, integrity and availability of data. Draws attention to issues such as information reliability and security. According to the author, these challenges need to be addressed not only at the company level but also at the level of the accounting service provider. Data controls at company level should be ensured to avoid errors in the accounting process and increase data transparency and consistency. As well as the control procedures should be covered in accounting service providers software in order to reduce the risk of potential errors and to rise the data reliability. Supplementing the author's opinion on the potential challenges for AIS in terms of data confidentiality, integrity, and availability, it is important to emphasize that AIS data must be protected from unauthorized or accidental alteration or data loss. This type of data protection usually uses passwords, which normally come in several levels of protection. This prevents AIS from being abused and allows the distribution of system functions between employees in a way that prevents them from performing the prohibited actions. Also, in response to the AIS data challenges, features are distributed to different employees that are only available to a select group of employees. A work register journal may be created to keep track of the employees working with the accounting data, which would record the operations performed by the employees. One of the effective ways to protect data is the control of incoming transactions or restrictions on adjustments. The physical security of the data must be ensured by making copies of the data to protect the data from loss by making data copies on two discs for example.

Thus, in the transition from accounting to digitalization, it can be said that the main focus of accounting is on the standardization of accounting and the assessment of data quality and accuracy. When it comes to digitalization, the focus in terms of accounting should be on real-time reporting, cloud computing, and sophisticated analysis of big data. Next subsection will cover the digitalization concept ant its meaning related to accounting.

**Digitalization.** “Digitisation and digital transformation has been occurring in organisations since the 1950s. The vacuum tube computers of 1943–1958 led to transformations in accounting, decision support and transaction processing. The gains were modest because of technology limits and constraints. The 1960s saw more transformations including introduction of some manufacturing robots, online transaction processing and time sharing. By the mid-1970s, the personal computer revolution was beginning. Throughout the 1980s adoption of computing technology accelerated. Visicalc and Lotus 1 2 3 were ‘killer’ applications that changed management and management decision-making. The 1990s brought data warehouses, local area networks, the global Internet, digital data storage and digital phones to the expanding technology possibilities available to managers. The 2000s saw the realisation of affordable cellular phones, faster parallel processors, distributed computing and storage and digital cellular networks. Digital data storage and computing capabilities increased exponentially in the early 2010s. Enterprise applications, the Internet of Things (IoT), Machine Learning, Artificial Intelligence (AI) applications, speech recognition and modelling and analytics technologies provide real-time monitoring, digital assistants, personalisation, distributed decision support and predictive analytics.” (Heavin & Power, 2018, p. 3). According to Li & Zheng (2018) “Artificial intelligence, in essence, is a simulation of the process of thinking and information obtaining” (Li & Zheng (2018), p.1). AI can be defined as a modeling process in which a computer performs brain thinking and information processing functions (Li & Zheng, 2018). The evolution of digital technology affects most economic activities and companies face major changes in their competitive environment. New competitors with digital business models have a competitive advantage in the market with companies that have invested

less in digitalization (Buck & Eder, 2018). The introduction of digital technologies in companies of any size positively influences the products they produce and the services they provide. An important aspect of digital innovation is the development and adoption of standards, which is defined as standard-setting digital technologies that enable and coordinates the actions and interactions of many actors in ecosystems, fields, or industries (Heavin & Power, 2018). Digitalization is a key driver of innovation, encouraging companies to invest in innovation to compete in the marketplace. The impact of digitalisation on business models is a rapidly changing field. According to Buck & Eder (2018) "the mega trend of digitalization has no boundaries and the pace of transformation is increasing at an exponential level. The emergence of digital technologies produced numerous terms, which are closely related but need to be differentiated properly" (Buck & Eder, (2018), p. 2). Hinings, Gegenhuber & Greenwood (2018) states that digital transformation is a combination of several digital innovations. Buck & Eder (2018) describes the digitalization as "the increasing penetration and adaption of digital technologies in society and economy as well as the associated changes in behavior. The meaning of digitalization is transforming analogue knowledge and information to become a stored digital form" (Buck & Eder, (2018), p. 2). Kragh (2018) states that "digitalization within a business context can be described as digital data made available to computers and software, allowing existing processes to become automated as well as allowing new kinds of processes." (Kragh, (2018), p. 2).

Rapid automation and digitalization of the accounting process allow information to be accessed here and now, i.e. in real time. Digitalization facilitates operations, providing much faster and more convenient access to the needed information. Allows to connect to data from different applications using for instance digital tool like cloud (Buck & Eder, 2018). According to Kurniawan et al., (2017) digitalization as technology helps to run business processes more smoothly, "for the example to manage accounting, financial resources, project management, personnel management, strategic planning, and decision-making processes" (Kurniawan et al., (2017), p. 1). It leads to cost reductions, facilitates faster information processing for decision making. The implementation of information technology in a company will only be beneficial if it is in line with the company's strategy, vision, and mission as well as the strategic planning of information systems. The introduction and development of new technologies undoubtedly give the company a competitive advantage, making it easier to compete in the market (Kurniawan et al., 2017). The integration of digitally oriented services into products opens up new opportunities and adds value to the combination of services and products (Buck & Eder, 2018). The digital transformation really helps businesses to innovate the business itself and to organize business activities properly (Buck & Eder, 2018).

According to Buck & Eder (2018) in order to keep up with this rapidly changing and developing world, it is imperative to transform companies by implementing digital technologies to increase their productivity. But digitalisation poses many challenges for corporate executives in the sense that choosing from such a vast array of digital technologies and making the right decision is extremely difficult. Failure to digitize the accounting process according to Kurniawan et al., (2017) has the potential for consequences such as: longer access to primary data, appereance of mistakes, absence of internal data control, data loss, complex data integration and storage as well as receiving the data for the end-user. According to Buck & Eder (2018), digitalization can cause problems such as:

1) prioritization between improving operational efficiency or meeting consumer needs;
2) servicing individual clients according to stereotypical processes, i.e. when the relationship with the loyal customer disappears;
3) The relationship between IT professionals and data analysts. Increasing resources for IT professionals can reduce data analysts;

4) challenges of combining different data resources. The question of whether all stored data is really needed and will be used for analysis or other purposes arises;
5) digitalization processes can reduce the need for both unskilled and skilled workers;
6) data security and availability.

Kumar (2018) argues that digitalization is foremost a change in industries where it has changed the structure of the industry itself. In the author's opinion, the consequences of digitalization can be seen as routes where:

- goods that exist physically are transformed into digital services;
- those platforms that are digital, over time are more and more optimized to make them as easy to use as possible;
- a business that provides services only to the local market becomes global and provides services to the other countries through digitization processes;
- and finally, digitalization itself simplifies traditional production methods, where manual daily work is replaced by robots, thus making human work easier and faster, and saving the company considerable costs.

The same author sees a lot of benefits that can be gained through the digitalization process:

- public bodies can make full use of Information and Communication Technologies, thus improving their infrastructure;
- e-Government initiatives for better deliver government services to citizens would be digitally responsive, extending the scope, redesigning the processes themselves, using integrated and interoperable systems, and introducing technologies such as clouds;
- countries that implement socio-economic projects would have more flexibility to identify additional projects, thus improving the sustainability of projects;
- in a centralized, citizen-centered delivery of services, the use of resources through digitization would be optimal;
- proactive promotion of digitalization would increase success and thus encourage other institutions and businesses to digitalize their processes;
- public-private partnerships through digitalization would lead to a closer link between these sectors and a more transparent partnership through the proper management and strategic control of projects;
- It is essential to promote the adoption of a unique ID in the implementation of digitization processes to maximize the benefits of the service so that the service itself and the people associated with it could be identified and provided to the service as quickly as possible;
- the creation of an appropriate position, such as a Chief Information Officer in various institutions, would help to develop and implement a wide range of projects at a faster pace and make projects more transparent.

Thus, not only digitalization as such, but the digitization process together with information accounting systems can bring many benefits both in the management of companies themselves, in project relationships with various institutions, and in speeding up normal business processes and transparency of services themselves.

**AIS relation with digitalization in terms of big data.** As technology evolved, the AIS evolved also. Electronic processing of invoices, payments, and other bookkeeping operations have been introduced (Bendovschi, 2015). Financial decision-making in various forms of business without accounting information

and their systems nowadays is impossible due to the large amount of data. Therefore, it is very important for companies to have reliable accounting information systems so that they can make decisions that help them to develop their business and thus attract the necessary investments (Mitrović & Knežević, 2018). According to Bendovschi (2015) the early 1920s is the point when accounting as itself started to change its meaning when function of bookkeeping was developed to the function of supporting companies' strategy and decision making. Accounting information systems have evolved along with technology. Data collection and accounting management have been improved. AIS could be tailored to each company specifically for its needs and accounting policies. Kurniawan et al., (2017) defines that "AIS is a combination of Accounting and Information Technology Systems which designed to help the company in terms of company economic-financial area" (Kurniawan et al., (2017), p.2). It is the responsibility of the company to manage and control the processes through AIS. As Kumar (2018) states that digital accounting itself has no specific definition. It shows the accounting changes that are taking place due to computing technology. Accounting itself has evolved along with information technology. "Punch cards and mainframes, databases and data warehouses, personal computers and productivity software, specialized accounting software and Enterprise Resource Planning (ERP) systems, Local Area Networks (LANs) and Wide Area Networks (WANs), among other things, have left their mark on accounting theory and practice" (Kumar, (2018), p.8). This has influenced the constant change in processes such as data entry, storage and processing, final reporting, internal control mechanisms, the audit itself, and the skills of accountants. According to Kurniawan et al., (2017) AIS consists of a transaction processing system, a general ledger and financial reporting system, and a management reporting system. Traditionally, AIS has business cycles such as financing, expenditure, human resources payroll, production and revenue which contribute to the General ledger and Reporting system (Kurniawan et al., 2017). Each company carrying out the economic activity faces accounting challenges, in one way or another. These accounting challenges can be solved with the use of information technology. For example, challenges like internal auditing, internal controls, and risk management, non-financial performance data, a combination of historical and current cost accounting, and tailor-made and interactive reporting can be solved by information technology like Big data. According to Buck & Eder (2018), technology is a key part of company's digital transformation, especially in applications like analytics, big data, mobile devices, cloud, internet and application development. Li & Zheng (2018) states that use of artificial intelligence (AI) has a good impact on quality of accounting information. On the other hand, AI which develops very quickly, can cause unemployment of accountants in the nearest future, but decisions can't be made only by computers, humans are those who always will see the reality adequately. Essentially, AI is already changing accounting information systems to improve operational efficiency and productivity, reduce human influence to make mistakes, and improve competitiveness between the supply of accounting information systems (Li & Zheng, 2018). The biggest advantage of AI relation with accounting information systems is that it is capable of processing huge amounts of data and accounting professionals need only to evaluate the information processed and make the right decisions or prepare the right reports for internal or for external purposes. As technology continues to improve and with the rise of AI and digitalization, the reduction of accounting professionals will be a major issue in the nearest future, as computer programs will do more and more accounting work. However, accountants will be those who will be able to use new technologies that will create long-term value. Digitalization and AI help to change outdated accounting systems and accountants will have the primary task of correctly interpret the financial data and passing it to managers (Li & Zheng, 2018). In accordance with Li & Zheng (2018) artificial intelligence will be a sophisticated process for facilitating and gathering data and providing technical support to the data analysis process by replacing tedious tasks for the accounting staff, however, decisions related to the market environment analysis still will be made by the management accounting specialists. „Artificial intelligence can provide information, build models and simulate the future environment to help management accounting

accomplish tasks, but it cannot completely replace management accounting to make management decisions" (Li & Zheng, (2018), p.3). With the growing need for big data analytics and digitalization, artificial intelligence can handle and process large amounts of financial data to help companies to grow their business activity.

## 2.2. Big data integration in AIS

The fourth industrial revolution brings to the businesses Big data, the knowledge of how these data are processed, and possibilities of the processes' automation. These processes have led to the acceleration of the development of new products, services, new business processes, and scientific methods. The digitalization of public services, driven by the need to modernize, reduce costs and deliver innovative services, opens up further opportunities for improving data storage, transmission, processing and analysis. To modernize processes within the organization there is a need to understand what is the Big data, how it could be integrated into various information systems, what benefits it will give and what challenges will be faced off.

**The concept of Big data.** Nowadays, a large amount of data is generated at an exponential rate from different sources such as health, government, social networks, marketing or finance every day (Oussous, Benjelloun, Lahcen & Belfkih, 2018). More and more digital data is being generated by mobile phones, websites, social networks, business software, smart home appliances, industrial machines, and smart cars. That is why the amount of digital data is growing in exponential speed (Klievink, Romijn, Cunningham, & Bruijn, 2016). "Big data management requires significant resources, new methods and powerful technologies" (Oussous et al., (2018), p.2). Big data is not considered as technology itself, it is refered to large volume, big variety data collection that can not be processed by traditional technology (Klievink et al., 2016). Big Data is dedicated to storing, cleaning, processing, analyzing large amounts of data. To be competitive in the marketplace, companies need to come up with big data analytics to help improve their products or services (Oussous et al., 2018). According to Klievink et al., (2016) to treat big data is a very sophisticated process because of hudge volume of incoming data, large variety and high velocity. The data collected in each business is an invaluable asset to companies. Ever since the advent of information technology, business intelligence and descriptive statistics have been used as standard tools to process collected information and make important business decisions. However, with exponentially decreasing data collection, storage, and processing costs, the amount and variety of data has reached a point where traditional data processing techniques have become too weak to cope with this problem. Therefore, new Big data analysis methods are used to process any large amount of data (Svendsen, Tollefsen, Gjengedal, Goodwin & Antonsen, 2018). Big data is still a relatively new phenomenon in literature and does not have a precise and uniform concept yet. When it comes to Big data, big software developers who focus on predictive analytics and structural data have a big influence on how they are formed. However, Big data components include not only structured data but also unstructured data such as video, photos, audio, various text fragments. (Gandomi & Haider, 2015). Oussous et al., (2018) states that "unlike traditional data, the term Big Data refers to large growing data sets that include heterogeneous formats: structured, unstructured and semi-structured data" (Oussous et al., (2018), p.3). When working with big data, traditional data processing tools are no longer sufficient to cover the scope of big data and to find insights. It requires powerful technologies and advanced algorithms (Oussous et al., 2018).

With the advancement of new technologies and data management tools and their application to big data processing, it is already possible to combine and analyze these data to discover new data insights and gain new information (Klievink et al., 2016). According to Svendsen et al., (2018) "Big Data could also be looked from the point of view of the new set of technologies that are helping to solve the challenges in collecting,

managing, and analyzing Big Data. These technologies include cloud computing and cluster computing for data storage and manipulation, Artificial Intelligence (AI) and machine learning for data analysis" (Svendsen et al., (2018), p.2). Trying to define the term *Big data* leads to characteristics that could describe this term. Gandomi & Haider (2015), Emani, Cullot & Nicolle (2015), Alles & Gray (2016) and Oussous et al., (2018) identifies three main characteristics of *Big data*, that is Volume, Variety and Velocity. Gandomi & Haider (2015) argue that defining a limit of *Big data* volume is inappropriate. Although the volume refers to the size of the data, the scope defined today, may in the future fall outside the set limits, as even larger data sets may be captured. In addition, data sets of the same size may require different processing technologies depending on the data type. Emani et al., (2015) states that volume, which is the benefit of processing large volumes of data, since only large volumes of data can produce better models and produce more accurate results. Variety defines the heterogeneity of the data set structure (Gandomi & Haider, 2015). According to Emani et al., (2015) Variety means that it is a data of different structures, and such data is usually unprepared for immediate processing. The rapid development of technologies enables companies to use different types of data, both structured, semi-structured and unstructured. When it comes to structured data, this means various tables that have a clearly defined data structure. Unstructured data is predominantly composed of texts, images, audio, and video because their structure is difficult to define uniformly due to the great diversity. Semi-structured data is a mixture of structured and unstructured data formats. Such data is usually processed using XML, where users define the structure of the data and can thus be read by a computer (Gandomi & Haider, 2015). Velocity is the speed at which the data should be analyzed. Because of digitalization processes, the pace of data creation is driving the need for things like real-time analysis and evidence-based planning. Any business generates a huge variety of data that, if properly processed, can significantly increase a customer's value (Gandomi & Haider, 2015). Emani et al., (2015) states that Velocity covers data streams, creating structured records, and accessing their delivery and access. Traditional data management systems are not able to handle huge data flows immediately. That's why big data technologies have emerged that help companies create real-time data fragments from the big data set needed to make strategic decisions (Gandomi & Haider, 2015). In addition to the three main characteristics of *Big data* like Volume, Variety and Velocity, there are three other *Big data* defining characteristics like Veracity, Variability and Value. Veracity demonstrates a degree of data unreliability when analyzing data sources where decisions are made by humans. For example, researching people's attitudes to understand certain things may seem confusing at first, but in this research, there is a lot of valuable information that can be used for analysis. Therefore, the need to analyze unstructured data is another important feature of Big data (Gandomi & Haider, 2015). Emani et al., (2015) describes Veracity like doubtfulness of the truth when it is some uncertainty in results achieved from Big data models. Variability, which refers to fluctuations in data traffic and complexity, which means that big data is generated from multiple sources that need to be merged, aligned, cleaned and transformed (Gandomi & Haider, 2015). Value is another characteristic of big data. The value of the primary data obtained from the original forms relative to their volume is usually small. However, analyzing large amounts of such data and grouping them into smaller groups can significantly increase the value of the primary data (Gandomi & Haider, 2015). According to Emani et al., (2015) Value is an essence of Big data, it helps to extract from the data a real value that is needed for decision making. The range of big data characteristics are usually determined by the size and activity of the company, so these boundaries change over time. All these characteristics are related with each other. This means that changing one characteristic increases the likelihood that another will also change (Gandomi & Haider, 2015). To effectively manage Big Data, it is needed to create value based on the amount, variety, and accuracy of the data while data streams are still moving (Emani et al., 2015). Big data is worth nothing if it is not handled properly. Big data has potential value only when it is used to make decisions. To make decisions from big

data, companies need efficient processes that can quickly turn large and diverse amounts of data into meaningful insights.

The process itself of getting insights from big data can be divided into five steps as shown in figure 6. These five steps form the two main processes of working with big data, namely data management and data analytics. Data management includes processes such as data acquisition and recording, processing and preparation for further work. Big data analyzes and behavior models are created in the data analysis process which provides insights from big data. So, the big data analytics process is basically nothing more than retrieving big data insights from big data (Gandomi & Haider, 2015).

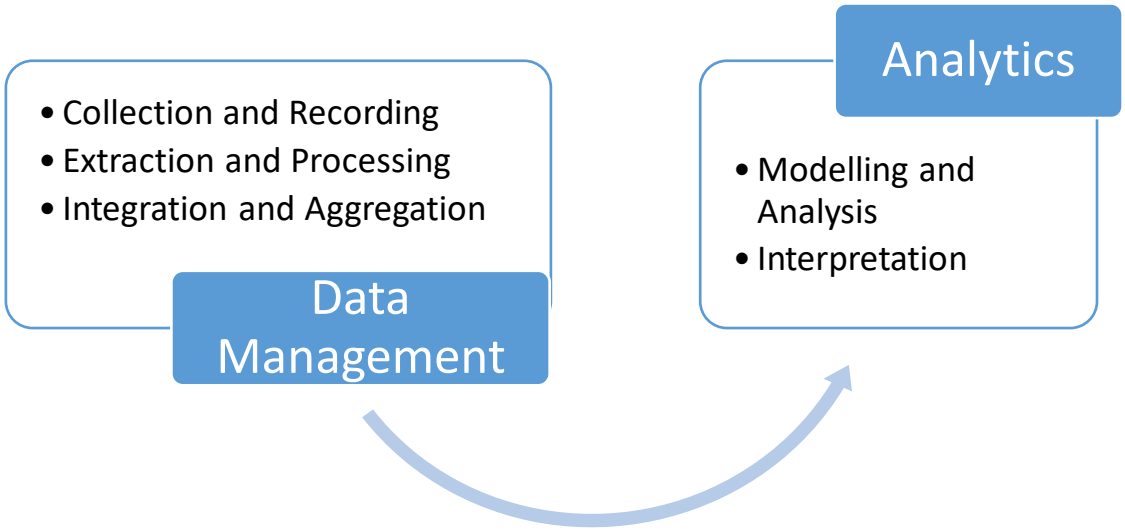


**Fig. 6.** The process of getting insights from big data (adopted from Gandomi & Haider, 2015)

Emani et al., (2015) describes data management process in three steps: gathering, processing and management. Having in mind the volume and variety of Big data, the raw data must be cleaned, labeled, classified and formatted. Emani et al., (2015) divide Big Data analysis process into four stages: "Acquisition or Access, Assembly or Organization, Analyze and Action or Decision" (Emani et al., (2015), p.3). At the acquisition stage, the data is downloaded from a variety of sources. Because of the large volume of data, in the acquisition stage, it is possible to apply different filters to store only the useful and necessary data for analysis without overloading a computer's memory. At the organizational stage, data pulled from different sources need to be structured in convenient formats to work effectively with it. In the analysis phase, algorithms are developed to help model the data and find new insights and interpret the results effectively (Emani et al., 2015).

Klievink et al., (2016) list five performance characteristics of big data usage:

1) using and combining different external and internal data flows;
2) the analysis phase shall cover both traditional (structured) and non-traditional (semi-structured or unstructured) data;
3) the importance of using real-time data streams;
4) advanced technology must be used to handle complex computing algorithms;
5) Existing data sets and data sources must be used in an innovative way to generate new information.

As long as the analysis model and the data sources themselves are chosen correctly, it will be clear whether Big Data will be successful. How much benefit it will bring to the end user and how much value will be created by analyzing Big Data and providing their insights will depend on Big Data analysis. Working with Big Data will be useful when the results and insights are used to improve existing work, increase brand awareness, for example, as well as increase positive impact on the market or ensure long-term relationships with business customers while constantly improving them. Start-ups get the most out of Big Data Analytics, as they can then use Big Data Analytics tools and gain a lot of essential insights from the start, both from a customer perspective and from the perspective of the services provided by the company itself (Ghadiri & Khani, 2019). Authors Ghadiri & Khani (2019) have noticed the factors which affects the success of Big Data and identified 8 key factors influencing Big Data's success, which is:

1. Businesses capacity. A key feature of this factor is the ability to absorb and implement Big Data analytics in order to effectively manage that data by putting together a variety of business strategies.
2. Individual skills. The success of Big Data depends a lot on the people who will work with them. If a person is able to perform the tasks related to Big Data analytics with the help of technical possibilities and their experience and skills, then success will definitely be guaranteed.
3. Technological possibilities. If working with Big Data will be valuable and provide exceptional knowledge to the end-users of that information by taking advantage of technological opportunities and using the entire IT infrastructure, then this success factor will allow companies to deploy such technologies and improve their business.
4. Analytics power. This success factor includes the ability to acquire Big Data analytics tools that will help to process and analyze data in large volumes as well as store those large volumes of data. Ultimately, being able to extract useful information from the data, which would help to make various decisions related to the activities performed.
5. Environment. Knowing and understanding the benefits of using Big Data would allow companies to successfully implement business performance and improve organizational structure. This environmental factor would benefit the development of new business models and the improvement of Big Data transmission capabilities.
6. Data governance. Succeeding in business will be determined by the ability to manage Big Data. Finding valuable insights from complex and voluminous data will give any company or individual a big advantage over others who are unable to do such insights and at the same time cannot manage large data flows.
7. Quality of data. This is the most important success factor of all, which determines how correctly decisions will be made knowing the quality of Big Data. Solutions will be effective and reliable when the quality of Big Data is assured. Data quality includes elements such as data availability, accuracy, reliability, complexity, compatibility, and completeness.
8. Quality of the system. System quality in this regard includes the overall performance of Big Data Analytics. This factor has a significant impact on the results a company achieves and the value that the company creates.

Accordingly, Big Data can provide valuable insights that can lead to starting a business or simply ruining it if Big Data is not used properly. So, it is important to have Big Data to use them meaningfully. Active use of big data analysis is the best way to ensure success. Having a good understanding of business strategy and knowing how to use Big Data will only increase the chances of success. Huge challenges can arise when working with Big Data without the use of right tools, which will allow processing data much faster and easier. Thus, the potential of Big Data is enormous, and their use creates opportunities to improve or even

fundamentally change business processes, as well as to respond more quickly to changing consumer needs and, at the same time, to world events. Big Data can even transform entire sectors of the economy, creating the conditions for the emergence of new innovative, disruptive companies, a variety of new services and products. Even the competitive advantage of companies and states will increasingly depend on the ability to use big data efficiently. As technology advances and the possibilities of using big data grow, computerized solutions will increasingly replace non-routine human activities.

In the table below there is a summary of the characteristics that define the characteristics of big data.

**Table 1.** Characteristics defining *Big data*

| | ***Big data* characteristics** | **Description** |
|---|---|---|
| Main | Volume | Size of the data in petabytes and zettabytes |
| | Variety | Heterogeneity of the data set structure (structured, semi-structured, unstructured) |
| | Velocity | Speed at which the data should be processed |
| | Veracity | Degree of data unreliability, data noise and accuracy |
| | Value | Significant information obtained from different data sources |
| Additional | Variability | Fluctuations in data traffic |
| | Complexity | Scope and relationship of multiple sources from which big data is generated for further processes like merging, aligning, cleaning and transforming |
| | Vision | Purpose |
| | Verification | Meet certain specification |
| | Validation | Fulfilled certain type of rules |

Big data opens up many opportunities for different sectors to change. Companies in their everyday life use big data for business intelligence. Retailers benefit from big data in understanding their customers and their buying habits. Financial institutions using big data try to make predictive models of market behavior for the investments. Big companies like Google, facebook on using big data streams creates their own business models to understand the behavior of individuals, information requested and preferred by users (Klievink et al., 2016). Indeed, the benefits of Big Data for both commercial and service businesses are enormous. With the ever-increasing flow of data and the ability to explore and gain valuable insights on a daily basis, companies are increasingly encouraged to use Big Data to understand both consumer needs and opportunities to develop new services or products.

Big Data technologies provide storage capabilities for large amounts of data, allow for the processing of large amounts of data in real-time, and enable the analysis of multiple heterogeneous sources (Oussous et al., 2018). According to Gandomi & Haider (2015) “using big data analytics, even small and medium-sized enterprises (SMEs) can mine massive volumes of semi-structured data to improve website designs and implement effective cross-selling and personalized product recommendation systems” (Gandomi & Haider, (2015), p.2). It helps to create and increase a customer’s value. In agreement with the authors that using Big Data analytics would really help both companies of all sizes and government organizations create more value for their users, improve feedback with them. Also, Big Data analytics could bring a lot of benefits in developing new services or new products.

Big data streams should be used not only by privat companies, but also by government institutions more widely to improve the effectiveness and transparency of the organization. It could help to reorganize the performance of public organizations in a more effective way, especially in National statistical institutes. On the other hand, many public organizations are not sure how to implement big data into their processes as well as they are lacking tools to use big data (Klievink et al., 2016). And here's the biggest problem currently facing most government organizations is how to implement Big Data into existing processes and thus increase work efficiency, information reliability, and transparency. All government agencies should adopt a common strategy for the use of Big Data, develop tools to process Big Data in a purposeful manner to gain valuable insights from Big Data, make decisions transparent, appropriate, and benefit the public.

While Big Data is still a relatively new field that offers many opportunities for meaningful insights, there are also challenges that arise at various levels of Big data processing, such as data mining, storage, processing, management, analysis, and visualization. There are also a number of issues with Big data processing due to security and privacy policies. Existing technology capabilities are not yet capable of covering and analyzing Big data sets, as the amount of data is growing much faster than the technology to process them (Oussous et al., 2018). The main challange nowdays working with big data is to manage the complexity. To clean the data and approve the quality of the data before merging different data sources for getting reliable results is another challenge that faces big data analysts. Also synchronizing external and internal data sources to gain maximum valuable insights from big data is another major challenge for companies working with big data. Unbalanced systems capabilities can also cause serious challenges while working with big data as it can significantly slow down the performance and scalability of big data. As well as the unbalanced *Big data* can cause challenges like multi-class unbalance issues. It means that „dealing with multi-class tasks with different misclassification costs of classes is harder than dealing with two-class ones" (Oussous et al., (2018), p.4). In order to understand big data relationships merging different data sources and deal with large data flows, detailed *Big data* data analysis using a variety of advanced algorithms and state-of-the-art software that analyzes data in real-time is required (Oussous et al., 2018).

Before starting the work with Big data, it is important to define big data categories that can help to decide which big data techniques are most appropriate. The categorization of Big data depends on the number of indicators *p* that is surveyed for each respondent and on the number *n* of the respondents themselves. According to these two criteria, *n* and *p* Big data can be divided into three categories: "low *p*, high *n*", "high *p*, low *n*" and "high *p*, high *n*". In order to draw the right conclusions from a large variety of data, it is needed the right technologies and methods that are adapted to work with big data volumes. With little information available, non-linear relationships and causes are often identified through various methodologies. (Gepp, Linnenluecke, O'Neill, & Smith, 2018).

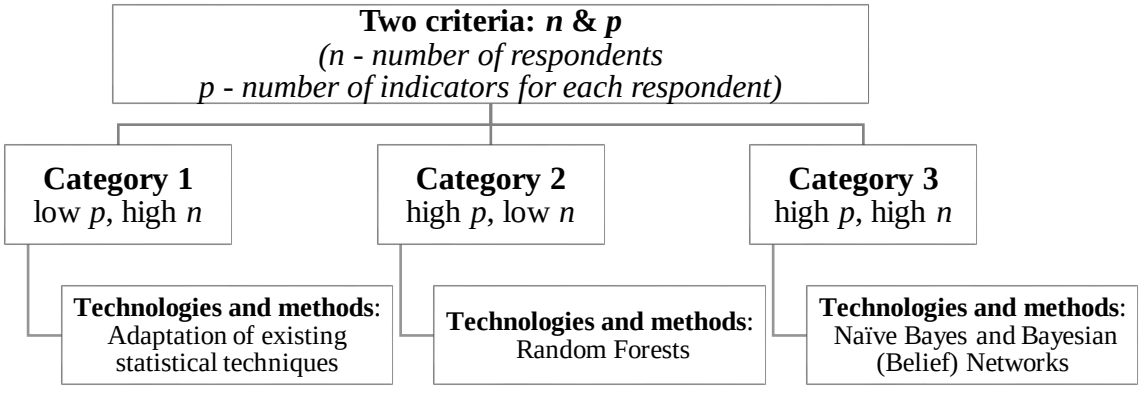


**Fig. 7.** Categorization of Big Data according to two criteria *n* and *p*

While working with Big Data a number of various challenges can occur. Ramadan (2017) names three main categories of Big Data challenges, that is data itself, process, and management challenges. The main data challenges are related to the key features of Big Data, which include data volume, veracity, as well as velocity and value, and variety. At the same time, the challenges of data visualization and variability contribute to this. Because Big Data is very large in volume, measured in petabytes, storing it is a huge challenge because of the need to allocate a lot of space in computer memory to store the data itself. Their processing and analysis require a lot of challenges as well. Challenges related to data processing processes include the data collection process itself and its storage, as well as data extraction and cleaning, followed by data collection and integration. After completing all the listed data processing processes, challenges can also be encountered in the analysis and data modeling stage and in the final stage as data interpretation. In the data management process, there are opportunities to face challenges such as data security, maintaining data privacy, data management mechanisms, secure data sharing, and data ownership. The same author Ramadan (2017) highlights another five additional challenges when working with Big Data. First of all, these are the right tools needed to perform Big Data analysis. In the current market, there are endless tools that can be used to perform analysis faster and more efficiently, and each of those tools is linked to a specific technical area of Big Data. Therefore, selecting the right tools to work with Big Data is a significant challenge to prevent the risk of unknown tools. No less challenging these days are Big Data experts with big experience and who are able to deal with Big Data processing. Who constantly are observing the innovations in that field which emerge in the market very fast every day. Finding such experts to be a guru in Big Data area is a big challenge for any company or organization. Another challenge with such a large amount of data is the difficulty to transfer it to Big Data platforms without specialists with the appropriate skills. Another challenge is the synchronization of various data sources and this is a very important challenge because having different data of different sources that are received at different times and at different speeds, without ensuring the synchronization of all these data leads to risks ta do meaningful analysis. Because when analyzing unmatched data, the consequences can be painful in terms of data interpretation. No less challenging is with retrieving data from Big Data platforms. Because Big Data is used by a variety of applications, the purpose of which is also very different like their level of use. Therefore, to provide information for such applications is a significant challenge that this data is used for the purposes for which those applications are designed.

In table 2 there are short descriptions of the challenges while managing Big data.

**Table 2.** Challenges managing *Big data*

| ***Big data* management challenges** | **Description of the challenge** |
|---|---|
| Management | Power of software for complex data management |
| Cleaning | Management of complexity of big data sources before data linking |
| Aggregation | Synchronization of external and internal data sources |
| Unbalanced system capabilities | Possible slowdown in system performance and access to big data itself |
| Unbalanced *Big data* | unbalanced classification of datasets in terms of class (minority, majority) |
| *Big data* analytics | Need of advanced algorithms and state-of-the-art software for analysis of big data |

**Big data integration into AIS.** In order to integrate big data into any local system, analytical solutions to handle large volumes of data are needed. It could be Machine learning (supervised learning, unsupervised learning, reinforcement learning), Deep learning, Incremental approaches, Granular computing (Oussous et

al., 2018). Analytical solutions applied to big data are needed to see some patterns in the data and extract valuable information. The purpose of Machine learning is to discover new data structures, improve existing algorithms, and make intelligent decisions by processing all available information, using existing data or by feeding new data streams. Deep learning is important for predictive analysts, as simple methods that are used to process small amounts of data are limited, so deep learning methods are able to solve the complexity problems that exist in big data sets. Incremental learning is often used to process large amounts of data. It can solve problems such as limited resources or data availability. This analytical approach can be applied to stock trend forecasting or consumer profiling. Step-by-step learning can provide faster classification or prediction time as new data becomes available. Granular computing "constitute a general computation theory based on granules such as classes, clusters, subsets, groups and intervals" (Oussous et al., (2018), p.6). It can be used to develop sophisticated big data applications or efficient computational algorithms. Main analytical solutions for Big data is described in table 3.

**Table 3.** Analytical solutions for *Big data*

| ***Big data* analytical solution** | **Description** |
|---|---|
| Machine learning | to reveal knowledge, learn complex patterns and draw intelligent solutions |
| Supervised learning | algorithms which learn to map new incoming data having input and output variables already |
| Unsupervised learning | Cluster analysis. Used to divide data into smaller groups with the same features |
| Reinforcement learning | Training is based on the contribution to finding the best behavior or path to a given situation |
| Deep learning | function of AI for data processing and modeling patterns for decision making |
| Incremental approaches | Process large amounts of data and solves data availability and limited resources problems |
| Granular computing | Applied for sophisticated big data applications to analyze the complexity of Big data |

To integrate data of various systems it is needed to build a good ETL tool, which stands for Extraction, Transformation, and Loading. The process of extracting, transforming and loading data, which requires complex computation, must find optimal access to data processing especially if the data is financial. With the right ETL in hand, it is possible to process a variety of business data with the goal of adapting it to an existing information system. Real-time data processing would also be possible to ensure that various reports to users are timely. Thus, good and appropriate ETL tools are the best way to improve and speed up Big Data processing. Before integrating the data into any system, it is necessary to perform data analysis, so-called business intelligence. The data is stored as information in various databases and in various formats, from which it is necessary to extract the information needed to create data visualizations for end-users. This data processing process includes steps such as removing inaccurate or duplicate data, cleaning the data and making certain calculations, and merging the organized data into a single data warehouse. To validate and verify data in the created data warehouse it is needed to run the ETL process. To test the transactional system it is needed to do a Database testing procedure. Data warehouses are very convenient to use for those data users who do not have much technical skills to extract the required data from various databases themselves (Fikri, Rida, Abghour, Moussaid & Omri, 2019).

The process of data integration is the process of finding and meaningfully linking relevant information. Data integration process solves problems such as data heterogeneity. Data integration with other systems can detect various data incompatibilities, generate new knowledge, or simply link more accurate data outside of

machine learning methods. According to Emani et al., (2015) the process of integrating the data of Big data into other systems can be divided into five steps which is shown in figure 8.

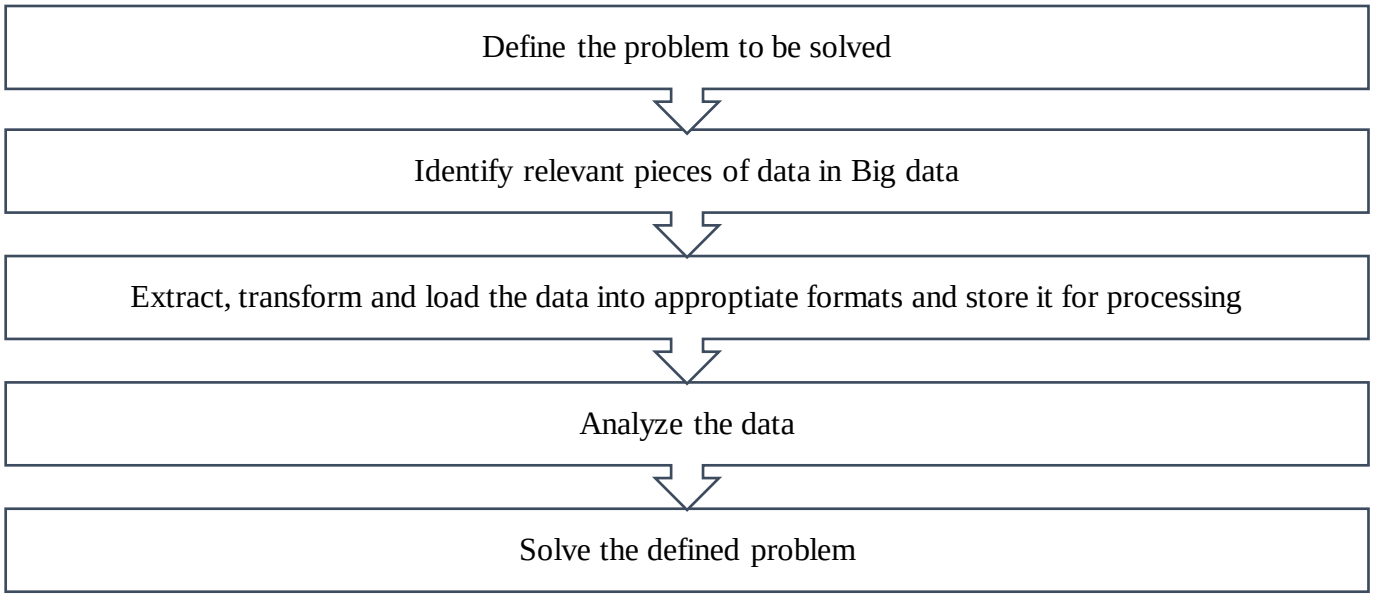


**Fig. 8.** Five steps of integrating the data of Big data into other systems (adopted from Emani et al., 2015)

Klievink et al., (2016) describe the use of big data processes in four main steps in data value chain which starts from taking primary data to converting it to new data appropriate for decision making. These four activities together make a value chain in other words big data process. The steps of big data process is shown in figure 9.

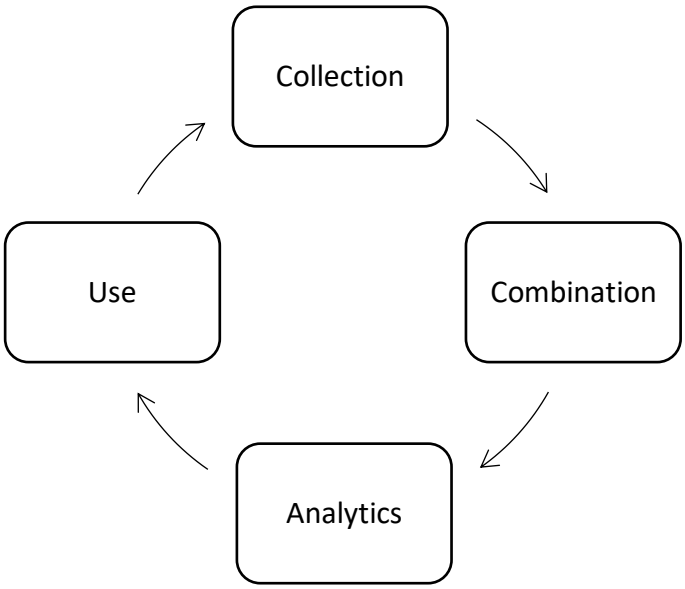


**Fig. 9.** Four main steps of using Big data process (adopted from Klievink et al., 2016)

To make the Big data integration process into AIS useful and smooth, standard tools that are already developed by other organizations should be used. One of such tool is SAF-T (Standard Audit File for Tax). It is an international standard developed by the OECD for the electronic submission of standardized accounting data to tax authorities or external auditors. The most suitable and relevant source of data for AIS is general ledger, where all primary data is collected. To ensure the efficiency and productivity of computer-

based auditing, proprietary audit software SAF-T has been developed to perform substantive data audits, providing access to standardized accounting data in an easy and understandable format.

Hanzal & Homan, (2019) gives a brief overview of developing global standards for accounting data proposed by OECD. In developing global standards for accounting data, processing and filing to improve enforcement mechanisms and reduce compliance costs, the OECD has provided guidance for software products that will create files for tax audits in XML format. The following principles are:

- integration of effective controls into computerized accounting systems to protect tax data;
- ensuring satisfactory audit trails by recording individual records in accounts for the proof of value of revenue;
- audit automation that allows users to check the accuracy of data processing;
- creating a standard audit file that allows for non-specialist to take the data from the system that is needed for further work;
- the software should be able electronically to file tax returns;
- long-term procedures for archiving electronic records must be ensured.

Essentially, SAF-T is a standardized file exported from the original accounting system for a given accounting period that is easily readable without any specialized knowledge due to the standardization of the format itself, thus facilitating the search and processing of information (Hanzal & Homan, 2019). According to the authors Hanzal and Homan (2019) the emergence of various processes that take place not only within the country but also outside it has created circumstances that have led to the creation of a new environment, the so-called globalization. In the context of globalization, new accounting standards are emerging in terms of the various accounting requirements that all businesses, both international and local, must meet. These new standards help to reduce costs that are part of the tax return and thus improve the mechanisms for securing these costs. In order for software vendors who intend to create XML files required for tax audits, the following OECD requirements must be met in order to comply with the uniform principles:

- accounting systems that are digitalized must be subject to tax protection controls;
- the value of revenue to be demonstrated during the audit by accounting for each item before it enters the final accounts, audit trails must be prepared and implemented;
- the preparation of exceptional reports must be integrated into the accuracy of the processing of audit-relevant data;
- in order to generate relevant audit data that can be extracted by the auditors itself, it must be possible to extract the necessary information by themselves;
- the new software should be able to submit the required declarations electronically;
- in order to have access to the data of the previous periods, an archiving procedure must be ensured, through which historical records are stored and can be used if necessary.

According to Hanzal & Homan, (2019) below are advantages for those who have installed the SAF-T system:

- Having the tax controller or auditor request the data needed to verify the correct payment of taxes would make it easier for the SAF-T system holders to obtain and process such information extracting it from the various accounting records. This would avoid misunderstandings when the auditors themselves search for data in the company's various accounting systems and, most importantly, simplify all the data collection procedures required to carry out the audit.

- SAF-T files will ensure that data exported from original accounting systems is reliable and can be expanded if necessary.
- Data stored in multiple accounting systems will be collected in a single SAF-T file, thus ensuring data integrity.
- The SAF-T file is based on the entries that are in the General Ledger. This file also contains information on customer and supplier invoices, various orders and their payments, and information revisions. SAF-T files support the standard tests and tests required for audit purposes as well.
- The biggest advantage of this system is that these generated SAF-T files can be used not only by the state tax inspectorates but also by other organizations for which these data are relevant.

Alles & Gray (2016) state that Big data will allow auditors to improve their efficiency, that it must be included in the audit of financial statements because Big Data will be the future of the audit. But it can already be said that Big Data is already part of the audit.

### 2.3. Conceptual model of AIS for response burden reduction

The problem analysis of the response burden showed that the response burden is a big issue for companies, which have to fill in a big number of statistical questionnaires to National Statistical Institutes. Despite other reporting obligations to various National authorities such as State Tax Inspectorate or Centre of Registers, NSI creates the biggest response burden on companies because it demands the same information that is provided for other institutions. Having analyzed the theoretical response burden reduction possibilities one way of effective response burden reduction could be data integration method. Nowadays, all companies have one or another accounting information system, which can be integrated into another information system. Accounting data that are stored in AIS using data standardization tools can be implemented into the statistical data collection process using a System-to-System mechanism that would allow reusing accounting information of the company. In this way the response burden would be reduced for companies by refusing of filling in particular statistical reports.

The motivation for choosing this kind of conceptual model was due to the availability of standardized enterprise accounting data from the State tax inspectorate (STI). In the midle of 2017 STI had launched a project "Development of Standard Accounting Data Collection and Management Subsystem (i.SAF-T)". The goal of this project was to increase the efficiency of STI activities in the field of tax assessment and payment control by standardizing and automating the inconvenient way of submitting paper accounting data to the tax administrator, ensuring faster, more efficient processing and more accurate assessment, thus reducing the administrative burden on taxpayers accounting and collection to the state budget. This system is based on the SAF-T files. This is a standard accounting data file that provides the company's accounting data for reporting periods or shorter periods, exported from the companie’s accounting information system. The chosen conceptual model, which will integrate data from SAF-T files to a particular statistical questionnaire, will benefit certain stakeholders such as the company, STI and NSI in terms of response burden reduction, transparency and timeliness of information. Whereas in Lithuania Standard Accounting Data Collection and Management Subsystem SAF-T was recently developed and is still being constantly improved, there was no such a researches of how these standard audit file for tax could be used for statistical purposes to reduce the response burden for companies.

In figure 10, the principle of the conceptual model for the response burden reduction is shown. Starting from the relationship between company and NSI where response burden arises due to a big quantity of statistical reports, which are obligated for companies to fill in and provide to NSI. In this particular conceptual model,

a special statistical report called “Company's activity statistical report (annual F01)” will be considered which is based on accounting data and every year till June 10th is obliged to provide a fulfilled statistical questionnaire to NSI. At the same time, nearly the same report is created from company’s AIS and submitted to Centre of Registers. Data for tax purposes is submitted to State Tax Inspectorate and many other different reports are submitted to other authorities. The data of all these reports creates so called an administrative data sources which can be reused by National statistical institute. Combining data from different administrative sources may reduce the response burden for company as the data collected from other sources can completely change the need to collect data from company directly. This would reduce the number of statistical questionnaire that has to be provided for NSI and in this way the response burden for a company would be reduced as well.

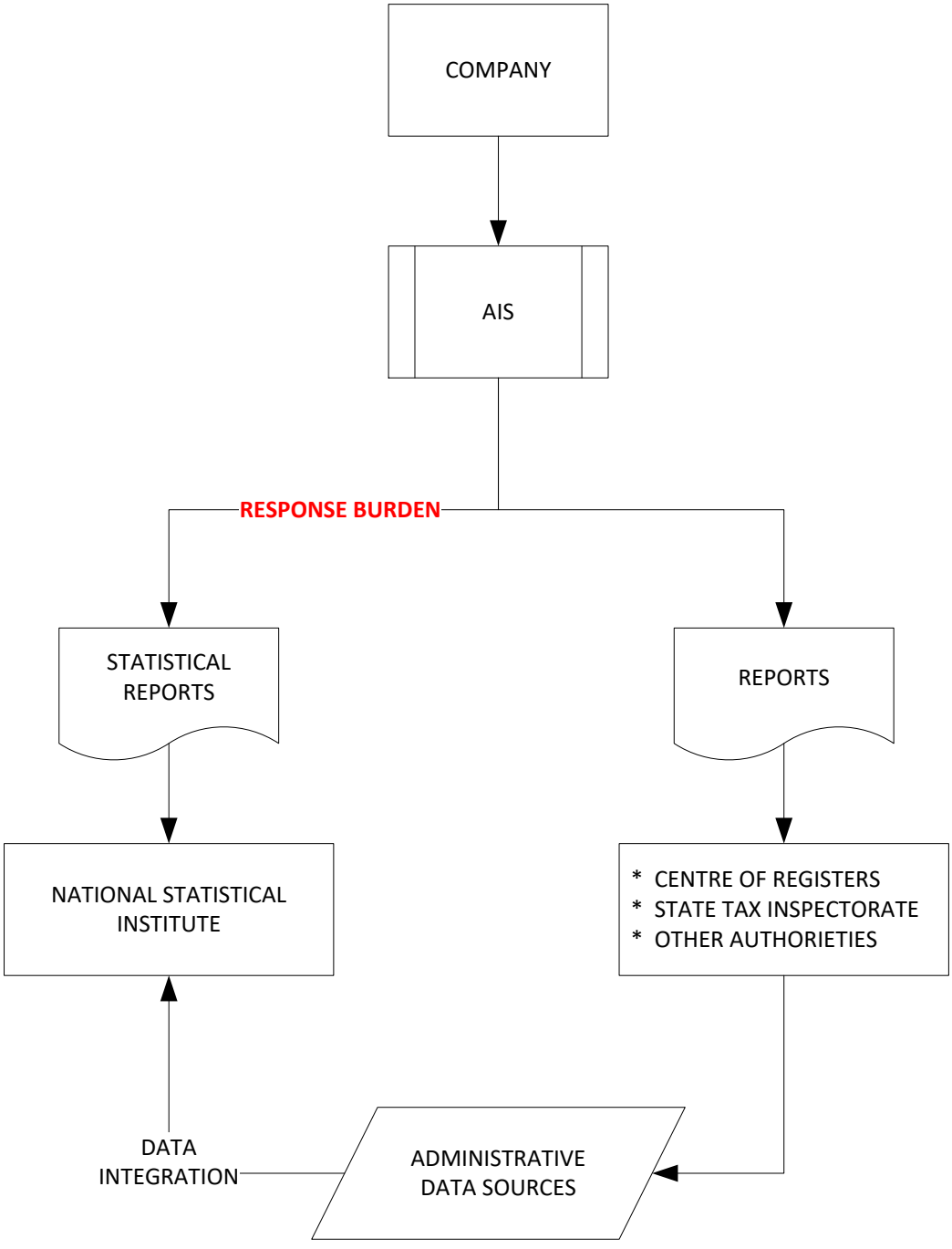


**Fig. 10.** Operating principle of the conceptual model for response burden reduction

Having described the operating principle of the conceptual model for response burden reduction in figure 9, the conceptual model for response burden reduction is presented in figure 11.

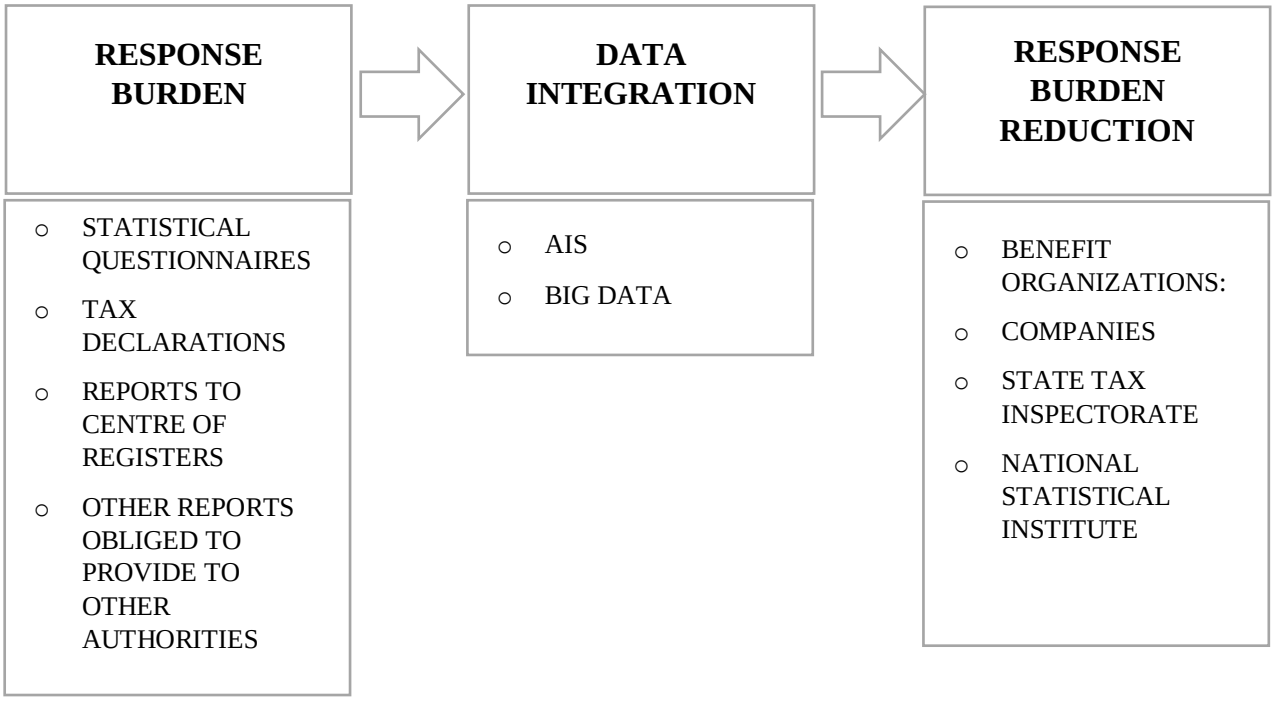


**Fig. 11.** Conceptual model for response burden reduction

The conceptual model for response burden reduction consists of three main parts: response burden, data integration and response burden reduction.

The response burden part is about the response burden that companies experience by preparing a number of different reports (Financial statement reports, Income tax returns, Statistical questionnaires), which are obligatory to provide for different stakeholders (National statistical institute, State tax inspectorate, Centre of registers). Preparing these reports for the particular institutions creates a response burden for a company. The response burden is high when authorities do not share with each other the same data that the company has provided to them and asks the company to provide the same data again, but in another form. The National statistical institute is the main culprit in creating the response burden, as it requests enterprises to provide data that they have already provided to other authorities. This is because not all access to third party data has been explored by NSI. This process should be continuous to make full use of existing third-party data for statistical purposes.

The data integration part consists of a Big data category where a high number of indicators and a low number of respondents includes data from the Accounting information system of the company which is transmitted to the State tax inspectorate information system called SAF-T. Having this data, it should be the opportunity to integrate them into statistical questionnaire (annual F01). This questionnaire is based on the basis of accounting data from the balance sheet and profit (loss) accounts. SAF-T files consist of ledger records and records of primary source documents. These records will be linked to the indicators in the statistical questionnaire (annual F01) in order to structure the data for the statistical questionnaire and estimate the opportunity to gather data for this statistical questionnaire directly from SAF-T files.

The response burden reduction section will list the benefits of reducing the response burden for stakeholders such as companies, STI and NSI. In the case of the successful implication of the conceptual model, the benefit should gain all the related organizations in terms of response burden reduction. STI will benefit in more transparent and faster auditing of companies, NSI will reduce the response burden for the companies by minimizing the number of statistical questionnaires and the company itself will be able to allocate saved cost for increasing the profits.

This conceptual model is relevant to companies and associated stakeholders, as it will reduce the response burden on companies by minimizing the number of filled statistical questionnaires and modernizing statistical processes such as the data collection process by integrating data from one accounting system to another information system. Based on this conceptual model, a methodology for response burden reduction in relation to AIS is developed in chapter 3.

## 3. Methodology for response burden reduction through the integration of AIS data

Improving statistical processes in NSI and reducing the response burden for companies requires constant monitoring and analysis of data collected by third parties for statistical purposes. Due to the lack of information in Lithuania on how to use structured enterprise accounting data from the SAF-T subsystem to solve the response burden reduction problem, there was a need to analyze and apply this information to solve the problem presented. For this purpose, methodological access of the research as well as sample and methods for data collection are described in this section.

**Methodological access of the research.** Mix method methodology was chosen according to the objectives of the research in order to increase the validity and reliability of the research. To investigate the companies' opinion about the validity and necessity of the conceptual model developed, the pilot research was chosen by submitting a questionnaire to companies with open and semi-open questions. Thus, collected opinions from companies was faster and responses was more objective. The case study methodology was chosen for the data analysis as the specific case illustrating the research problem is considered. In order to evaluate the correctness of the model and its practical application, the survey method was chosen by interviewing targeted experts.

In figure 12 the logical structure of the research is presented. The research was carried out in four stages.

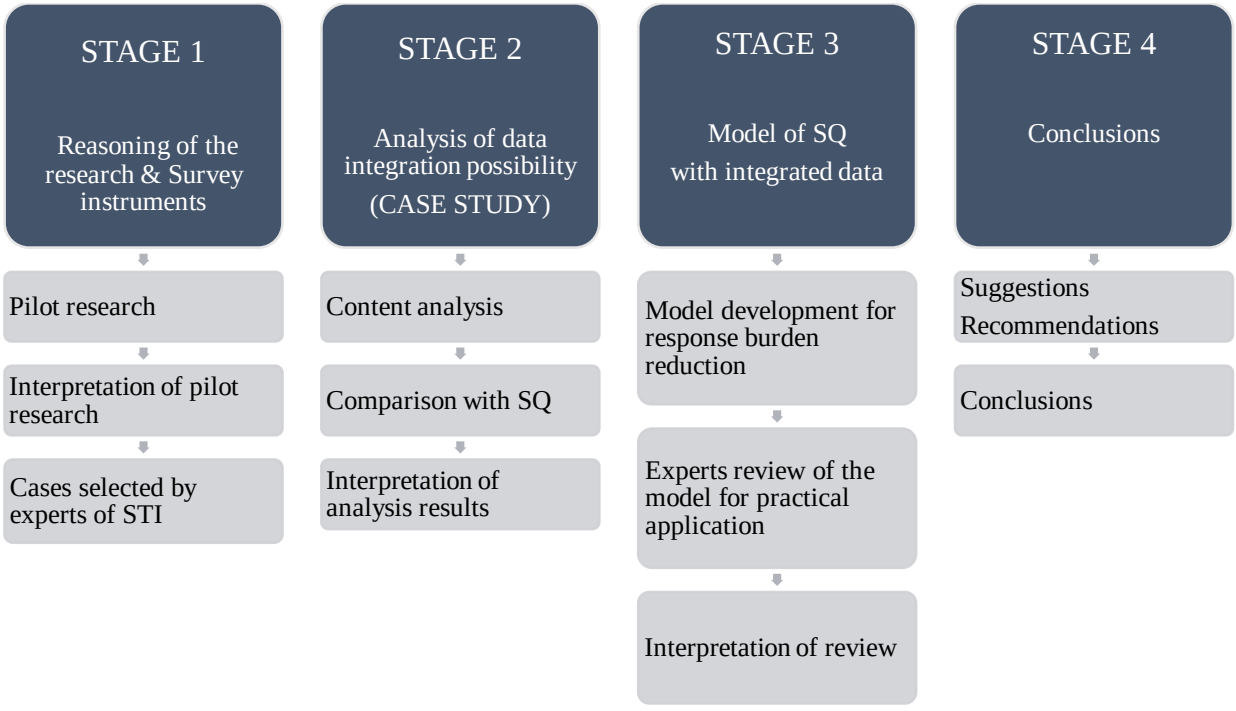


**Fig. 12.** The logical structure of the research

Below, steps of each stage is explained in detailed.

**Reasoning of the research and the survey instruments (1st stage).** In stage 1 the reasoning of the research and the survey instruments is presented. The research started from the pilot survey to justify the relevance of the selected problem and the possible benefits to the companies. Wray, Archibong, & Walton (2017) noticed that pilot research plays an important role before carrying out a main study. The pilot study can test future research methods, provide a clearer understanding of the research team, thus preventing future difficulties. This is a qualitative basis for research, as pilot studies can lead to improvements in

methodological and practical issues or new formulations. A short questionnaire (Appendix 1) about SAF-T subsystem with open and optional answers was sent for a number of randomly selected companies to get their opinion about the proposed possible solutions for the response burden reduction problem-solving. Random selection method was chosen to poll the companies because of the bias of the opinions.

The same section provides a description of the cases selected by the experts of the State Tax Inspectorate (STI). Data from selected cases will be analyzed using quantitative content analysis, which is defined as a research method for subjectively interpreting the content of numerical data. This method was chosen according to the STI ability to share the data from the SAF-T subsystem. The SAF-T project carried out by STI is one of the seven parts of the Intelligent Tax Administration System project program, which started in September 2017 and had to finished in September 2019. Companies that compile accounting records by technical measures have to provide the data of the accounting documents in the SAF-T file on request. The SAF-T file is used in the process of the tax administrator's control in respect of which control actions are performed. Unfortunately, with the prolonged project, STI was not able to share at that moment more data for analysis. As a result, data of 3 companies were submitted and used for the quantitative content analysis. The three considered companies are of medium size and from the service sectors, such as Advertising and Market Research, Headquarters and Management Consulting, and Publishing. In accordance with the confidential data disclosure law, neither company names nor their codes could be disclosed. However, the data obtained from STI can be analyzed and compared with the data in the statistical report without disclosing the particular company and presenting generalised analysis results only. The analysis will be performed in several steps. The first step will be to compare the content of indicators of the SAF-T file and the statistical report. The compliance of the content of the indicators from the SAF-T file with the indicators of the statistical report will be checked. The titles of the corresponding indicators will be compared and conclusions will be drawn about whether it is the same content of the corresponding indicator or not. The second step will be to compare the numerical values of the SAF-T file and the corresponding indicator in the statistical report, analyzing how close they correspond to each other and conclude whether these numerical values can be integrated from the SAF-T file into the statistical report or not. The survey was carried out and information collected in February. Information collected from the poll have been analyzed and the interpretation of the pilot survey is described in the 4.1. subsection.

**Analysis of data integration possibility (Case study) (2$^{nd}$ stage).** In stage 2, the case study of the accounting data integration into statistical questionnaire (SQ) is presented. The case study covers the data collected from SAF-T files and their analysis in terms of content compliance and comparison with the statistical questionnaire structure. This method is the most appropriate to verify how the content of the standardized accounting of the SAF-T system corresponds to the content of the statistical report. As the STI standard accounting data are presented according to the general ledger account classifications, it allows finding exact or partial correspondences with the indicators of the statistical report, which is compiled on the basis of business accounting standards, namely balance sheet and profit (loss) statements. Also, by having company accounts in the general ledger, it is possible to find matches for those items that are required to complete the purchases section of the statistical report. Thus, the correspondence between the content of the articles of the SAF-T system and the particular articles of the statistical report will be compared. The correspondence of the content of the indicators with certain sections of the statistical report will be assessed on how the content of the SAF-T indicator corresponds to the content of the indicator of assets, equity and liabilities, income, expenses and profit, and purchasing sections of the statistical report. The case study was carried out in March. The interpretation of results of case study is introduced in 4.2. subsection.

**Model of Statistical questionnaire with integrated data (3rd stage).** In stage 3 the particular model of how data from SAF-T files are integrated into statistical questionnaire is developed and reported. Since comparing the correspondence of the SAF-T system general ledger content with the content of the indicators of certain sections of the statistical report and integrating the existing values from the SAF-T system according to the content correspondence into the corresponding indicator content of the statistical report, allows checking how exactly data from AIS to SQ can be integrated. Thus, for each indicator of the particular SQ section, an appropriate value will be entered according to the correspondence of the items from the SAF-T system. The corresponding values of the SQ indicators will be compared with the values of the SAF-T indicators and it will be seen what percentage of the values are met. This will allow judging exactly the possibility to integrate data from SAF-T into SQ. Data modeling will be done with the same three companies given by STI. This stage of model for statistical questionnaire with integrated data was carried out in March.

After model development for response burden reduction, to check its practical suitability and applicability, the method of interviewing by questionnaire the two experts was chosen. One of the experts is a certified auditor with extensive experience in auditing companies., who compiles the statistical report considered in this work. The opinion of the experts will allow to substantiate or deny the suitability of the model for practical use and also to answer the main research question of whether this model would reduce the response burden for companies. The results of the developed model together with open-ended questionnaire questions was sent by e-mail to the experts for their opinion. The experts was asked to provide answers to the following questions:

1) Is the analysis of the content of the relevant indicators in the SAF-T file and the statistical report fully disclosed?
2) Are the numerical values of the SAF-T file data correctly integrated into the relevant indicators of the statistical report?
3) Could this model be applied to reduce the response burden for companies in practice?
4) How could this model be improved?
5) What challenges are likely to be encountered in applying this model to reduce the response burden?

After received the experts' answers, they was examined and an interpretation of the opinions was provided. The main issues to be addressed are content relevance, data integration, model accuracy and practical application, and possible model improvements. Review of the experts was carried out in April. The modeled statistical questionnaire with integrated data, the experts review about the model for practical application and interpretation of the review is provided in 4.3 subsection.

**Conclusions of the methodology for response burden reduction in relation to AIS (4th stage).** This subsection will cover suggestions and recommendations for the beneficial stakeholders and conclusions of the overall methodology section which is presented in 4.4. subsection.

## 4. Research findings of the response burden reduction through the integration of AIS data

This section presents the results of the study analysis for a possible burden reduction tool for companies by integrating data from AIS into a statistical report.

### 4.1. Results of reasoning of the research

The pilot survey results analysis indicating the relevance of the selected problem is presented in this chapter (1 stage). The research started from the pilot survey to gather the opinions from companies about the response burden issue for better understanding the problem of response burden. A short questionnaire was created based on a literature review. It consists of ten questions with open and optional answers. The introduction part of the questionnaire presented what the SAF-T subsystem is. Indicating that it is a Standardized Accounting Data Collection and Management Subsystem developed by State Tax Inspectorate (STI) to increase the efficiency of STI activities in the field of tax assessment and payment control, by standardizing and automating the inconvenient way of submitting paper accounting data to the tax administrator, ensuring faster, more efficient processing and more accurate assessment, thus reducing the administrative burden on taxpayers. The purpose of this questionnaire was to gather opinions from companies about SAF-T subsystem usability for response burden reduction for the National Statistical Institute (NSI) purposes. That is for investigating the usefulness of SAF-T subsystem for data integration into the statistical report. The aim of this questionnaire was to find out to what size and in which activities companies face this problem. On average, how many statistical questionnaires do companies fill in and provide to NSIs and how long does it take on average. Also about the obligation for companies to provide standardized accounting data in the SAF-T subsystem upon request of the STI. And the opinions of the companies about the possibilities for reducing the burden. Ten randomly selected companies from the related statistical survey were asked to fill in the pilot survey questionnaire. Online survey questionnaire was created in Google docs application and the web adress of the poll was sent to the companies. Nine of the ten selected companies had provided the answers to the poll.

**The results of the pilot survey.** The results of the pilot survey showed that companies with 10 and more employees face the burden of filling in statistical reports and that a larger proportion of companies (about 80% according to the pilot survey) are medium-sized companies (up to 249 employees). Small companies (1-9 employees) were not included in this survey, because according to the NSI sampling methodology, such companies participate in no more than 3 statistical surveys, therefore the probability of them getting into this pilot survey remained very low.

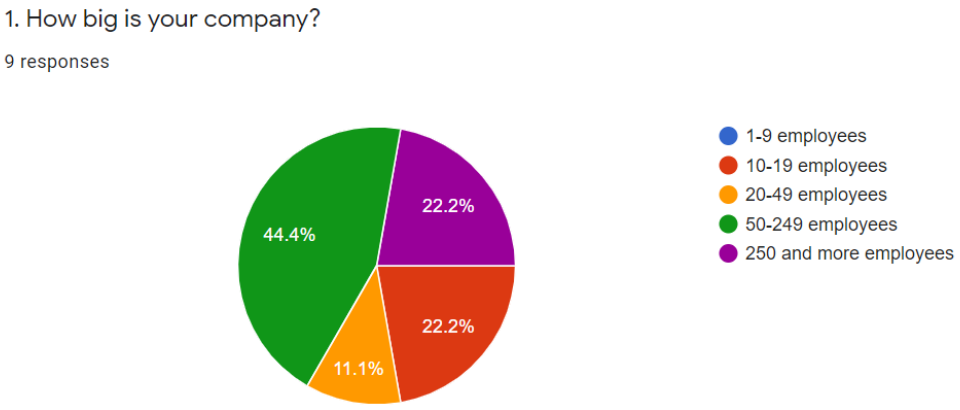


**Fig. 13.** The results of the pilot survey for the 1st question

Most of the companies were from the Services sector (66.7%). Other Companies represented the Industrial and Retail/Wholesale trade sectors.

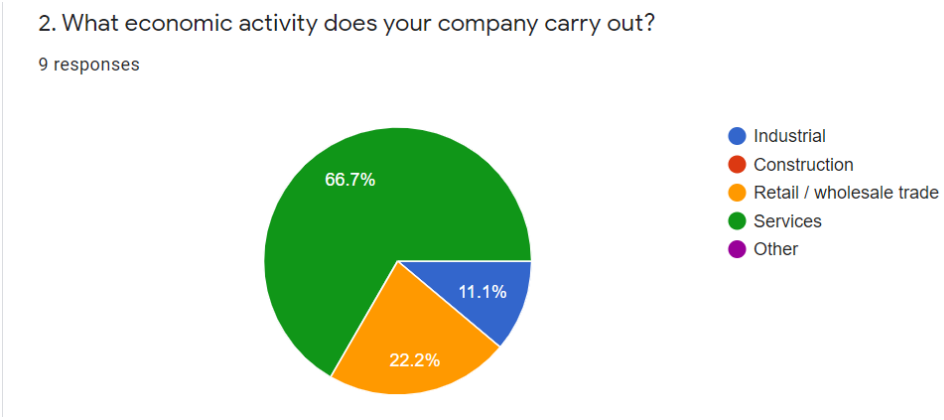


**Fig. 14.** The results of the pilot survey for the 2nd question

The vast majority of the respondents (55.6%) admitted that they prepare and provide data to NSI. The other part of the respondents (22,2%) didn‘t prepare and provide data for the NSI. As the other 22,2% of the respondents didn‘t know at all if their company provides data for the NSI.

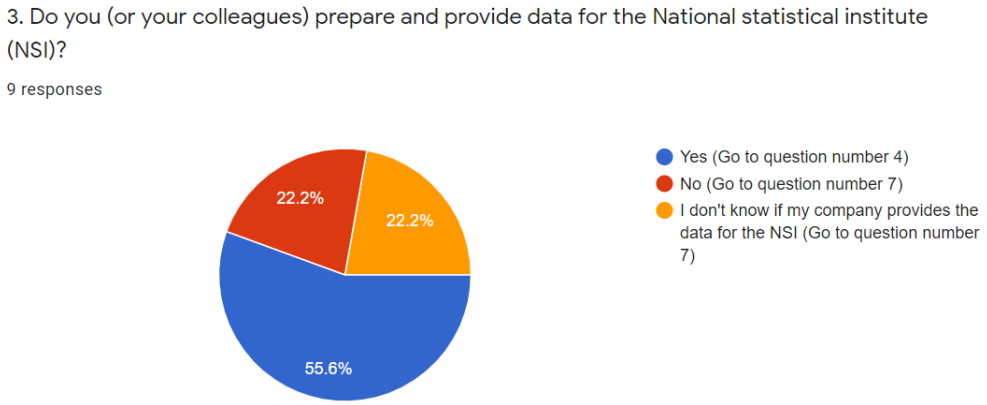


**Fig. 15.** The results of the pilot survey for the 3rd question

Asking companies how many statistical questionnaires they usualy prepares for NSI in a year, the vast majority (around 88%) stated that more than 5 statistical reports per year they submit to NSI. This indicates that the burden on companies providing statistical reporting indeed is high.

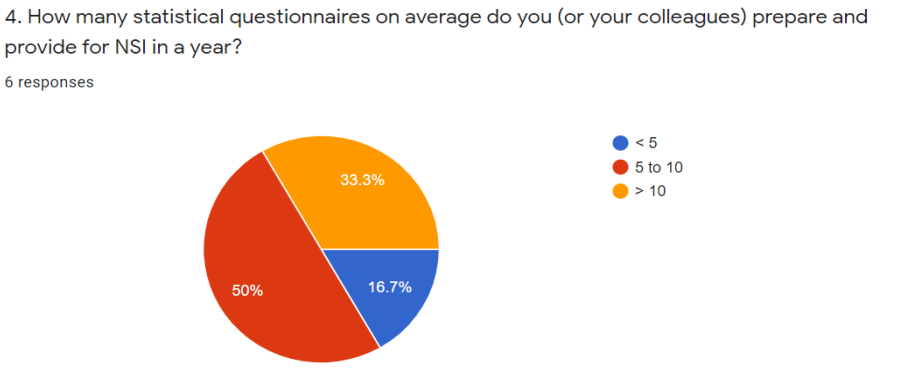


**Fig. 16.** The results of the pilot survey for the 4th question

Half of the respondents who answered that they prepare and submit statistical reports to the NSI indicated that it takes up to two hours to fill in the statistical report, and the other half of respondents indicate that more than four hours it takes to prepare and fill in the statistical reports.

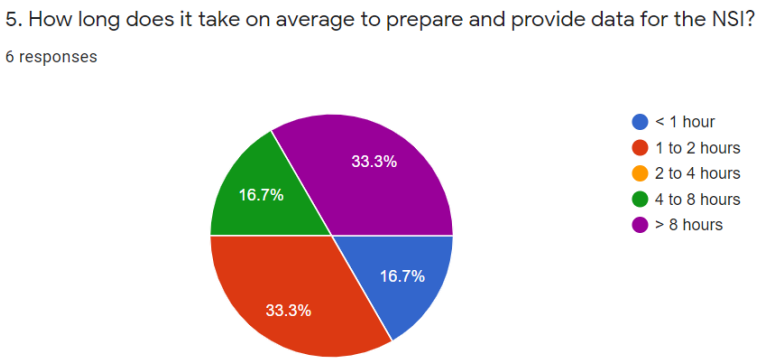


**Fig. 17.** The results of the pilot survey for the 5th question

The average percentage to the question how companies measure the response burden for the NSI was 70%. Most of the companies appear to be burdened by NSI.

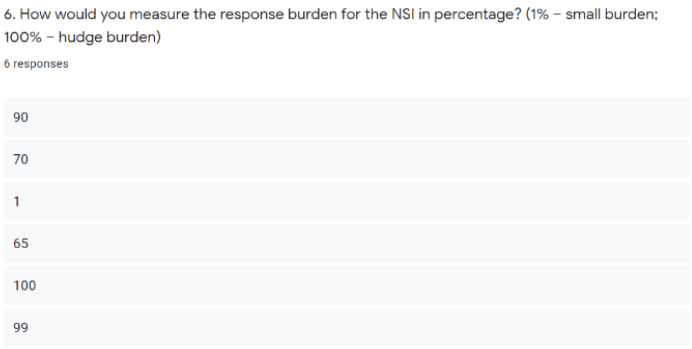


**Fig. 18.** The results of the pilot survey for the 6th question

In further examining the views of the companies, they were asked to what extent they were familiar with the SAF-T subsystem and the obligation to provide standardized accounting files to the STI. The responses show that half of the respondents were aware of STI's obligations to provide data through the SAF-T system, while the other half were not. These results were surprising, although only 9 companies were involved in the poll, it was expected that the SAF-T subsystem will be better known.

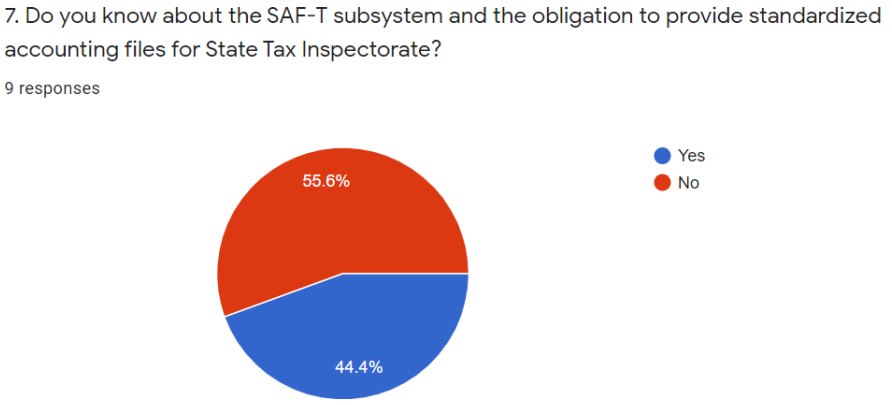


**Fig. 19.** The results of the pilot survey for the 7th question

As the companies currently provide standardized accounting data to the STI through the SAF-T system only upon its request, the pilot survey data showed that 75% of the respondents would agree to submit the data to the STI voluntarily if NSI would had the opportunity to use it and integrate it into the statistical reports so that companies would no longer had to fill in the particular statistical reports.

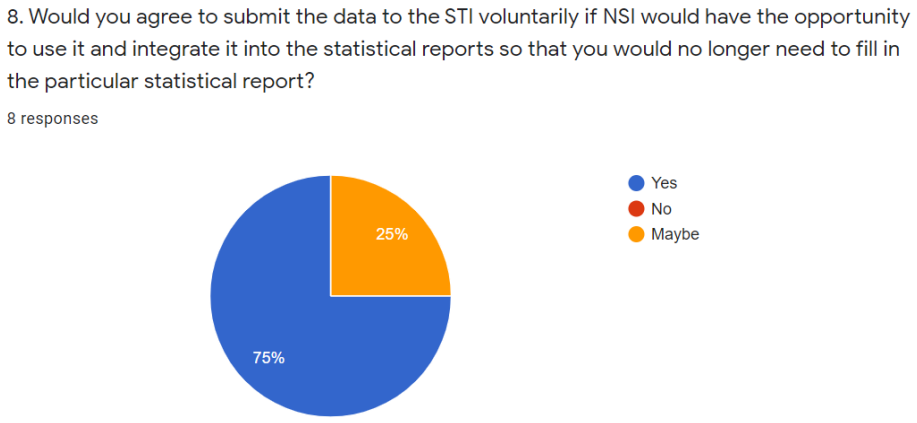


**Fig. 20.** The results of the pilot survey for the 8th question

To find out the opinion of the companies about the burden reduction tools that NSI could implement, it was suggested to collect information from other institutions and thus fill in statistical questionnaires with those data. It has also been suggested that accounting systems would automatically generate statistics for NSI. Another burden reduction tool has been proposed to take advantage of SAF-T technology and have all general ledger entries and thus generate statistical reports without interviewing the company itself directly. The last question which was asked was about companies' opinion on data they submit to other institutions. Was wondering if these data could be used to fill in statistical reports and reduce the response burden. The vast majority of companies agreed that the data they provide to other official institutions could be used for statistical purposes to collect the data and thus reduce the response burden on businesses.


**Fig. 21.** The results of the pilot survey for the 9th and 10th questions

The pilot survey results justify that the problem of response burden for companies does exist and that it is relevant. Vast of the majority of the companies have to prepare data for the statistical questionnaires and fill it in for sending them to the NSI. This job requires a lot of time from the companies' accountant or other employees who are responsible for the preparation of the statistical questionnaires. To solve the response burden problem, it needs to be addressed through new technologies. Having appropriate measures for data collection from other authorities for which companies send their data, could improve the data gathering process in the NSI and thus reducing the response burden for the companies. The opportunity to collaborate

with other authorities and share the data provided by companies to other official institutions would help to solve the problem of reducing the response burden.

**Description of the cases selected by the experts of the State Tax Inspectorate.** Cooperation with the STI provided an opportunity to analyze three company's cases for the possible data integration from the SAF-T file into the statistical report, using quantitative content analysis. After analyzing the information obtained from the three companies, it can be concluded that they are of medium size (up to 249 employees) and operate in the service sector. On average every company has about 600 account names in the SAF-T file which are aligned with the account numbers in the SAF-T classification system. For each account, debit and credit balances are reported for both the beginning and the end of the period. In addition, all three companies report to NSI an average of about 9 various statistical reports per year. Results of the case study of the accounting data integration into a statistical report are presented in subsection 4.2.

### 4.2. Analysis of data integration possibility

This chapter will cover analysis results from case study where data from SAF-T files was analyzed in terms of content compliance and compared to the statistical report data content (2 stage). The standardized accounting data file is compiled according to the general ledger account classification (Appendix 2), which contains the company's data on non-current and current assets, liabilities, income and expenses. In the SAF-T file, the Account ID number contains the General Ledger account and sub-account codes used in the company's accounting system and the corresponding Account ID number contains the General Ledger account codes collated by the company according to the relevant SAF-T (Annex 2) Account classifier description. The comparative statistical report selected for the analysis is constructed on the basis of business accounting standards, which contain data on the company's capital, assets, liabilities, purchases, expenses and profit (Appendix 3).

The three given companies by STI was examined. Each company was provided with a SAF-T file that is compiled according to the names of the general ledger accounts. As each company has a different system of account identification numbers in its accounting information system, the correspondence of account numbers according to the standard account classification (annex 2) is presented in the SAF-T file. Together with the account names the debit and credit balance figures for the beginning and the end of the period were given. These figures will be used in the next stage for the data integration. An example of a SAF-T file is shown in figure 22.

| Account ID no. of the company | Account name | Corresponding account ID no. of the classifier in the standard account classification | Debit balance at the beginning of the period | Credit balance at the beginning of the period | Debit balance at the end of the period | Credit balance at the end of the period |
|---|---|---|---|---|---|---|
| 1140000 | Programinės įrangos įsigijimo savikaina / Cost of software | 1130 | 0 | 0 | 24475 | 0 |
| 1148000 | Programinės įrangos vertės amortizacija / Software value amortization | 1138 | 0 | 0 | 0 | 2039,58 |
| 5005200 | Dividendų pajamos / Dividend income | 5001 | 0 | 0 | 0 | 0 |
| 5006000 | Pardavimų grupės įmonėms pajamos / Revenue for sales to group companies | 5001 | 14515,5 | 0 | 12068,21 | 0 |
| 5203000 | Patalpų nuomos pajamos / Premises rental income | 5401 | 0 | 14515,5 | 0 | 12068,21 |
| 5204000 | Turto nuomos pajamos / Property rental income | 5401 | 0 | 0 | 0 | 0 |
| 6000000 | Parduotų prekių savikaina / Cost of goods sold | 6000 | 48378,96 | 0 | 85132,96 | 0 |
| 6111300 | Elektros energijos sąnaudos / Electricity consumption | 6301 | 0 | 0 | 0 | 0 |
| 6111400 | Šildymo sąnaudos / Heating costs | 6301 | 0 | 23623,41 | 0 | 49196,66 |
| 6111500 | Apsaugos paslaugų sąnaudos / Costs of security services | 6301 | 0 | 0 | 0 | 0 |

**Fig. 22.** Extract of General Ledger from the SAF-T file

The aggregated table of the comparison of the corresponding indicator in the SAF-T file and the corresponding indicator from the statistical report is presented in Appendix 5. The table was compiled on the basis of statistical report indicators structure. The correspondences of content between the indicators of the statistical report and SAF-T file were compared and analyzed. The compliance column indicates the level of compliance of the indicator. F means full compliance, P - partial compliance, D - derivable. Derivable means that the indicator can be deducted from the already available indicators. Comments on the content correspondence analysis are provided below the table.

The correspondence of the content of the total 124 indicators of the statistical report with the content of the indicators of the SAF-T file was examined. Results of indicators correspondence is shown in figure 23.

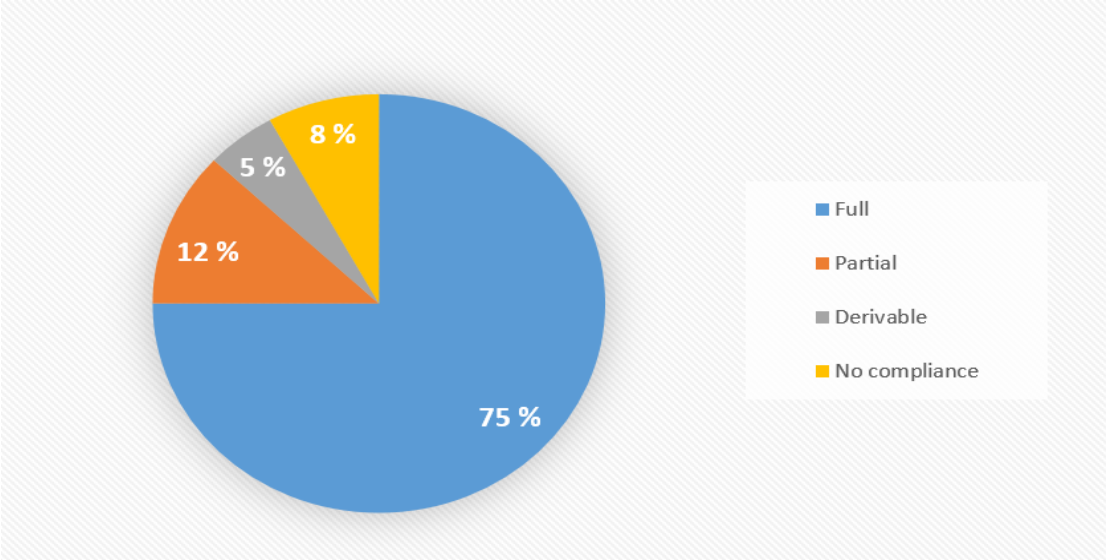


**Fig. 23.** Statistical report and SAF-T file content compliance by the compliance type

The content of the 93 (75%) indicators from the statistical report fully corresponded to the content of the indicators in the SAF-T file, the 15 (12%) - partially corresponded and the 6 (5%) were derivable indicators, the 10 (8%) indicators did not correspond at all. Most of the compliance with the content of the indicators were in such sections of the statistical report as fixed and current assets, equity and liabilities, income, expenses, profit. Partial compliance of the indicators was observed in the purchases section, while in the long-term tangible and intangible assets allocation sections there was the biggest uncompliance with the content of the corresponding indicators which amounts of 10 (8%) of all the surveyed indicators.

The detailed analysis of the content of the respective indicators was analyzed on the basis of the appendix to the statistical report, which contains explanations on the filling in of the indicators and the Business Accounting Standards and their methodological recommendations. A detailed analysis of the 15 partial compliance of the content of the indicators led to the following conclusions:

1. Statistical report indicator “of which raw materials, materials, fuels, etc.” (No. 501) contains materials, raw materials, fuels, semi-finished goods and other low-value assets purchased during the reporting period, which are not fixed assets of the enterprise. In accordance with the provisions of the methodological recommendations of Business Accounting Standards (BAS) 11 “Costs” and BAS 9 “Inventories”, the value of indicator "raw materials, materials, fuel, etc." is approximately equal to the sum of changes in inventories of consumables, raw materials and fuels (including depreciated small tools) and inventories of raw materials, consumables, including part of work in progress and depreciation (+) or restoration (-).

   In the general ledger account classification, the corresponding indicator “Other general and administrative expenses” (No. 6312) shows expenses related to the main activity and management of the enterprise, but not related to the sale of goods or services. These costs may include the following expenses incurred during the reporting period: maintenance, rent, depreciation and write-off of administrative buildings and other common property; asset depreciation; company representation; support, charity; social; various non-profit taxes related to the typical activities of the company; salaries and social insurance of the management and service personnel of the company and its divisions; penalties for improper performance of contracts or product defects; doubtful debts; provisions made at the end of the reporting period, unless they should, by their nature and meaning, be included in cost of sales; others related to the typical activities of the company; amortization of

intangible assets, depreciation of vehicles, common equipment, other non-productive property, plant and equipment, rental, operating, repair, insurance costs, property, plant and equipment, intangible assets, inventory impairment losses, miscellaneous losses, non-productive services (accounting, rights, communication and others) costs, etc.

Thus, as can be seen from the content comparison of the indicators, the indicator in the statistical report is much narrower in scope than the corresponding indicator in the general ledger classification of accounts. Therefore, in the next step, when the relevant values of the indicators will be entered, it will be necessary to take into account the relevant account names, which will correspond to the content of the indicator in the statistical report.

2. Indicator of statistical report "of which fuels" (No. 507) includes different types of fuel. These can be coal, oil products, natural gas, biomass and the like. Fuels purchased as feedstock for further processing are not included in this indicator.

   The corresponding indicator of the General ledger is the same as for indicator "of which raw materials, materials, fuels, etc." (No. 501). Therefore, the content of this indicator is only partially in line with the content of the corresponding indicator in the general ledger as it contains more than jus a fuel. Thus, when searching for a numerical value for this indicator from the SAF-T file, it will be necessary to take into account the names of the accounts provided and find those account names that mention the fuel types listed above.

3. Statistical report indicator "goods for resale" (No. 540) contains goods purchased during the accounting period for resale without further processing or modification. The indicator includes purchased real estate for resale. In accordance with the provisions of BAS 11 "Costs" and BAS 9 "Inventories", the value of purchased goods for resale is approximately equal to the cost of goods and services sold for resale, the change in inventories and depreciation of goods and services for resale (+) or recovery (-) amount.

   The corresponding indicator of the General ledger is "Cost price of products and services acquired" (No. 6002). The purchase cost of goods and services acquired must be shown in this indicator, plus all taxes and levies related to the purchase (except those that will be recovered later), transport, preparation for use and other costs directly related to the purchase.

   Consequently, only those accounts which list goods acquired during the reference period for resale without further processing or modification will need to be taken into account when entering the numerical values from the relevant general ledger indicator. This will affect the relevance of the content of the indicator, since, no explanation will be included in the names of the relevant accounts and it will not be clear if the goods for resale were modified or not.

4. Indicator of statistical report "services for resale" (No. 541) includes services purchased during the reporting period for resale in the same condition as received. These are services that are invoiced by service companies but not provided by the company itself, such as the purchase of transport and accommodation services by travel agents (where their turnover consists not only of commissions but also of the actual amount involved in the service transaction). Also are included services where the services of other companies of the same activity are resold (for example, transport companies not only transport goods on their own but also resell the transport service of other transport companies), it is as a result of physical assistance services. As well as the electricity and heat which can be resold is shown here (electricity for street lighting, etc., as well as purchased from suppliers and/or independent heat producers and resold to the consumer), communications, transport, training, and other services.

   The corresponding indicator from the SAF-T file is the same as for the previous indicator. It is "Cost price of products and services acquired" (No. 6002). The assumptions for matching the content of

the indicator are the same as in the indicator goods for resale. In the account names in the general ledger, when looking for the value of services for resale, it will be needed to consider the account itself, how it is named. Here again, inaccuracies may arise due to the relevance of the content of the account name.

5. Other two indicators of statistical report "electricity used for company purposes" (No. 511) and "heat used for company purposes" (No. 512) are filled in only by companies that have concluded contracts with electricity and heat suppliers and pay them for these services. Companies renting premises under premises leases that do not specify that the tenant pays for electricity and heating do not complete these codes. In this case, the costs for electricity and heat are included in the rental price and shown under line " rental of the long-term material assets" (No. 526) of the code.

   The partial corresponding indicator in the general ledger accounts classification is "Repair and maintenance costs" (No 6301). The purpose of this indicator is to obtain the expected future economic benefits from the use of the asset and is therefore included in operating expenses for the period in which they are incurred. However, the cost of operating property, plant and equipment (for example, production workshops, production facilities, etc.) associated with the production of an item may be allocated to the cost of the product in accordance with the method of calculating the cost of the product. Examples of operating costs of property, plant and equipment include utility charges (water, sewerage, gas, electricity, heating, garbage collection), site maintenance, vehicle fuel consumption, lubricants, tires, detergents, filters, washing services, etc. costs.

   Thus, the correspondence of the content of this indicator in the SAF-T file is much broader than the content of the indicator in the statistical report. When searching for a numerical value for this particular indicator, it will be necessary to take into account the name of the account, which will include the name related to electricity and heat.

6. Indicator of the statistical report "employment services of employees of employment agencies (payments to agencies for the work of their employees in the company)" (No. 522) shows payments to employment agencies engaged in the provision of human resources to companies for the work of their employees in the enterprise.

   For this statistical indicator the correcpondence in SAF-T file is the indicator "Other general and administrative expenses" (No. 6312) which shows expenses related to the main activity and management of the enterprise, but not related to the sale of goods or services.

   Comparing the content of the particular indicator of the statistical report and General ledger it is obvious that the statistical report indicator covers only part of the corresponding indicator in the SAF-T file. This means that the numerical value for this indicator will be composed only of a part of the indicator "Other general and administrative expenses" where the particular sub-account name will indicate that it is related with expences from agencies of employment.

7. Indicator of the statistical report "Construction work for (sub) contractors" (No. 533) shows the costs incurred by contractors or subcontractors for construction work carried out by them under contracts or subcontracts. Subcontract is a company (contractor) contracted with another company (subcontractor), under which it is agreed that the performance of the other (main) contract between the contractor and third-party (buyer, customer), the subcontractor will produce goods or provide services that the contractor must incorporate or use in supplying the customer of the ordered goods or providing services. A contract is a contract concluded by a company (buyer, customer) with another company (contractor) to perform certain works in accordance with the technical conditions provided by the customer, when the customer is responsible for the final product. Construction work includes all work performed during the construction or demolition of a structure (excavation, masonry, concreting, installation, installation of foundations and roofs, carpentry, finishing,

commissioning and adjustment of equipment). Construction work also includes the construction of roads and railways, the construction of bridges and tunnels, the construction of public utilities, and the installation of electrical, plumbing and other equipment.

Indicator "other (non-construction) work carried out by (sub) contractors" (No. 534) indicates the value of purchased work performed by another company under contracts or subcontracts, according to the technical conditions provided by company as the customer and usually from companies' materials. The works purchased are companies' products (for example, a subcontractor sews clothes from companies' raw materials according to the terms of reference submitted by the company as the customer, i.e. provides an industrial sewing service).

The partial corresponding indicators in the SAF-T file for the "Construction work for (sub) contractors" and "other (non-construction) work carried out by (sub) contractors" are "Unfinished products and works in progress" (No. 202) and " Products" (No. 203). In the account No. 202 is recorded expenditures on work in progress and unfinished products. Subcontractors may be hired to produce these unfinished products and works in progress. When the subcontractors will complete the assets these amounts will be transferred to the products account No. 203.

8. Indicator of the statistical report "other services" (No. 536) includes the following services:
   - Information technology services - hardware and software consultancy, data processing and database services, network maintenance and repair of computer equipment;
   - Postal and courier, transport and logistics services - land, water, air transport, warehousing and other logistics services, including transport costs incurred during the trip;
   - Marketing services - research of market opportunities, product acceptability and consumer purchasing habits, exhibitions, fairs, etc.;
   - Advertising services - development and implementation of advertising tools;
   - Legal services - advice and representation in labor disputes, civil and criminal cases, general advice and consultations, preparation of legal documents;
   - Accounting and auditing services - consulting on accounting, bookkeeping, auditing and tax issues;
   - Business management services - consulting, leadership and management support services;
   - Personnel training and employee health, property and life insurance services - insurance premiums for the insured company 's property (vehicles, real estate, etc.);
   - Financial services - commissions for banking services, etc. similar costs included in operating or other operating costs;
   - Architectural, engineering and related technical consultancy, industrial cleaning (cleaning and maintenance of all types of buildings or premises, disinfection) and security services (protection of persons and property, theft investigation, industrial safety consultancy);
   - Maintenance and repair of machinery, equipment and buildings and other services - utilities, telecommunications services, patent and license fees (if not capitalized), insurance premiums, expenses of shareholders and meeting expenses of governing bodies, contributions to business and professional associations, secretarial and translation services, outsourced information services, wrapping and packaging services, canteen and prepared food supply services, real estate agency services on a fee or contract basis, government services for a fee, i.e. use of natural, forest, gas and oil resources, copyright protection, registration of industrial property objects, etc.

   From the SAF-T file the partial corresponding indicator for the "other services" are two indicators "Sales costs" (No. 62) and "General and administrative expenses" (No. 63). Sales costs include

operating expenses that cannot be related to specific goods or services sold. It could be depreciation, rental, maintenance, storage costs of finished goods, commissions to sellers, salaries and social security contributions of trade staff, advertising of services and goods and other similar costs. General and administrative expenses include the expenses that enable the company to operate, such as a representation of the company, operation of common fixed assets, rent, depreciation, amortization, impairment, property insurance, other services received, long-term employee compensation paid under individual agreements between the employer and the employee, remuneration and social security contributions, bonuses for employees, members of the board of directors and supervisory board and the like, remuneration for acquired rights if not recognized as intangible assets, banking and other credit institutions, support, various business-related taxes (real estate, non-deductible value-added tax, which the company is not entitled to deduct from VAT, and the like), except for income tax, fines and interest for improper performance of contracts or defects in production, and other general and administrative expenses.

From the comparison of the content of the indicators, it can be concluded that the indicator of the statistical report partially corresponds to the content of the respective indicator of the SAF-T file, as the indicator of the SAF-T file may include more sales and general and administrative expenses than the corresponding indicator of the statistical report.

9. Statistical report indicator "of which income from construction subcontracting" (No. 601) is filled in only by construction companies and includes income gained from construction subcontracting.

   The partial corresponding indicator from the General ledger is " Income from services provided" (No. 5001). This indicator contains not only the income from construction subcontracting if the company is a constraction company but also other income earned by the company from operating activities.

   Therefore, if a company is engaged in construction activity, it does not mean that this indicator fully corresponds to the indicator in the statistical report. By integrating the numerical values of this particular indicator it should be looked at the sub-account to see if the revenue is from construction subcontracting.
10. Indicator of the statistical report "excise duty included in income from the sale of goods in Lithuania" (No. 603) is filled in by the companies that have an obligation to pay excise duty to the State budget and, in accordance with the company's accounting policy, includes excise duty in sales revenue.

    The partial corresponding indicator in the SAF-T file is "Other receivables" (No. 2446) as the collected excise duties are recorded in this particular class of accounts.

    Consequently, the content of the corresponding indicator in the SAF-T file is much broader, as it can contain not only excise duties but all other receivables. Thus, only part of this indicator can be used for the further data integration step.
11. Statistical report indicator "of which purchase value of goods for resale (excluding excise duty)" (No. 605) contains the cost of purchased goods that an enterprise has acquired for the purpose to resale.

    The partial corresponding indicator for this value is "Products purchased for resale" (No. 204). This indicator contains purchase cost of goods acquired for resale.

    The main difference between these two corresponding indicators are that statistical indicator (No. 605) is shown in the cost section and SAF-T indicator (No. 204) – in the stock of current assets. To obtain the full correspondence of the content of the statistical indicator No. 605 which would match the content of the SAF-T file indicator No. 204, it is needed from the "purchased goods for resale" at the beginning of the period subtract the "purchased goods for resale" at the end of the period and

add the statistical report indicator No. 540 to this difference. In this way will be obtained a full, or at least very close correspondence to the statistical indicator content.

12. Indicator of the statistical report "of which income from the sale of goods for resale" (No. 613) shows only that part of income which is gained exclusively from goods for resale.
    The corresponding partial indicator in the SAF-T file General Ledger is "Other income" (No. 5401) includes income which the company does not allocate to operating, financing and investment activities. Indicator "Other income" may include income from the sale of non-operating inventories, amounts of compensation in excess of losses incurred. It also may include fines and interest on arrears due to improper or late performance of contract terms, support received without conditions, etc.
    Hence, a comparison of the content of the respective indicators makes it clear that the content of the indicator in the SAF-T file is much broader than the content of the statistical indicator and only part of this indicator can be used. As in previous cases, the search for relevant content will need to take into account the sub-accounts, which would state that this is a revenue from the goods for resale.
13. Statistical report indicator „Finished, built (repaired) for self-use" (No. 1104) contains the long-term assets of own-produced, constructed property, reconstruction or repair work performed during the reporting period.
    The corresponding partial indicator from SAF-T file is „Works of construction (production) of tangible assets in progress" (No. 1261) which contains works of construction (production) of tangible assets in progress as for self-use as for other purposes.
    Comparing the content of the respective indicators, the conclusion is that in the SAF-T file the content of the indicator corresponds partly to the content of the statistical indicator, as there are tangible fixed assets not only for self-use but also for sale to the market.

The analysis of the content of the indicators in the statistical report and the SAF-T file showed that most of the indicators, including both full and partial matches of the content of the indicators (87%) can be used for the next step - integration of data into the statistical report.

### 4.3. Model of Statistical questionnaire with integrated data

In this 3rd stage, after analysis of the content of the relevant indicators in the SAF-T file and the statistical report, the numerical values of those indicators were examined. The corresponding numerical values of the indicators were transferred according to the content of the indicator from the General Ledger to the statistical report. The numerical values were integrated in order to compare the accuracy with which the statistical report could be completed by integrating the numerical values of the respective indicators from the SAF-T file. To assess the accuracy of the numerical values, a percentage of difference was calculated. It showed how much the difference between the value of the corresponding indicator in the SAF-T file differs from the value of the corresponding indicator in the statistical report, dividing this difference by the value of the statistical report and converted it into a percentage. At this stage, as in the second stage, the data of the same three companies were examined. The results of the analysis of the values correspondence is summarized and shown in Appendix 5.

For every investigated company a total of 156 values where integrated from the SAF-T file into the corresponding indicator of the statistical report. The aggregated results of value integration are shown in figure 24.

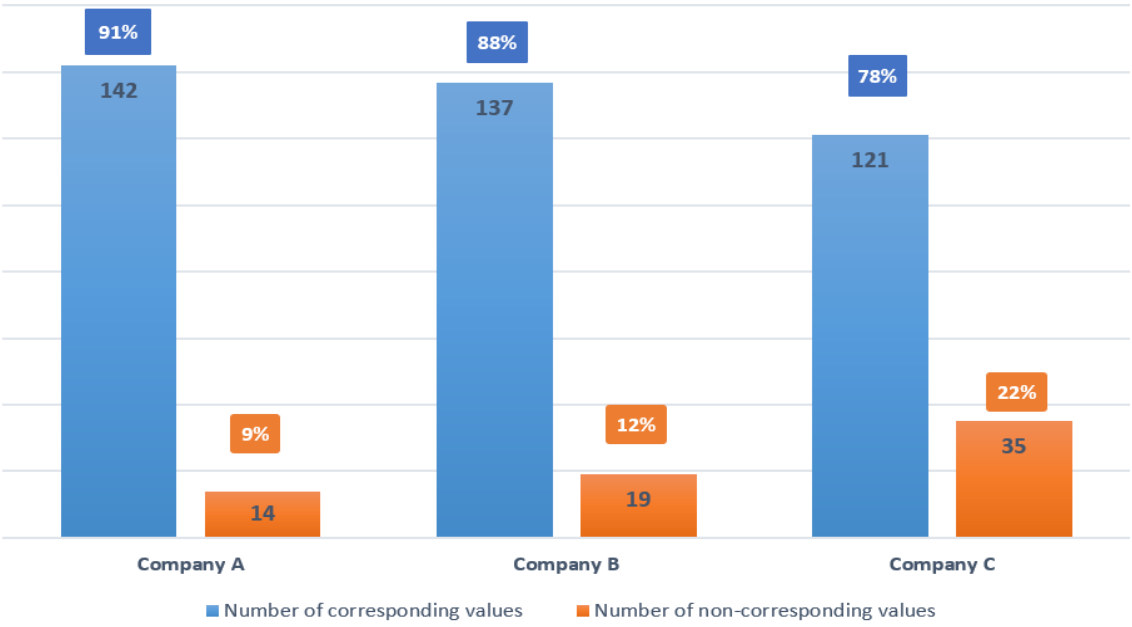


**Fig. 24.** Number of the corresponding and non-corresponding values for the companies A, B, C

On average about 86% of all SAF-T file relevance indicators corresponded to the statistical report indicators and only about 14% didn't correspond. Non-correspondence was of different scale from 1% to 100% which can be seen in table 4. It can be concluded that most of all values which was integrated from the SAF-T file into the statistical report, the non-correspondence to the real value was in the range of 1 to 19%.

**Table 4.** Number of indicators by non-correspondence range for investigated companies

| | **Number of indicators for non-correspondence range** | | | | |
|---|---|---|---|---|---|
| | **0%** | **1 - 19%** | **20 - 49%** | **50% >** | **Total** |
| **Company A** | 142 | 7 | 2 | 5 | 156 |
| **Company B** | 137 | 7 | 5 | 7 | 156 |
| **Company C** | 121 | 7 | 3 | 25 | 156 |

A general conclusion can be drawn for those SAF-T file indicators with an equal difference of 100%. That means that there was no corresponding indicator in the statistical report. These indicators from the SAF-T file were usually recorded in other rows in the statistical report. Another remark is indicators that could be included in the statistical report according to the SAF-T General Ledger entries are not in the statistical report. It means that the value of such an indicator in the statistical report is zero. As a result, it can be stated that enterprises do not always fill in statistical reports carefully or fill in the corresponding amounts in other lines of the statistical report. The essential discrepancies (from Annexx 5) in the values of the corresponding indicators are explained below by showing the corresponding fragment of the table and commenting the particular discrepancies below the corresponding fragment.

**Table 5.** Discrepancies for costs and amortization variables

| **Account description** | **SAF-T file indicator No.** | **Statitical report indicator No.** | **Company B** | | |
|---|---|---|---|---|---|
| | | | **SAF-T file value** | **Statistical report value** | **Diffe-rence, %** |
| Costs of other intangible assets acquisition | 1150 | 1212_6 | 45952 | 57513 | -20 |
| Amortization of other intangible assets (-) | 1158 | 1206_6 | 15816 | 27378 | -42 |

The difference of 20% in the variable “Costs of other intangible assets acquisition” most likely is due to the fact that the statistical report requires intangible assets to be shown at acquisition cost, and write-offs or sales of intangible assets during the year, or rewritings from one item to another, are shown in separate lines of the statistical report. In the SAF-T file, the cost of an intangible asset is shown after deducting sales, write-offs, or rewrites from one item to another.

**Table 6.** Discrepancies for shares variables

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Difference, % | SAF-T file value | Statistical report value | Difference, % | SAF-T file value | Statistical report value | Difference, % |
| Shares of corporate group‘s companies | 160 | 306 | 0 | 4140941 | -100 | 0 | 2835454 | -100 | 616711 | 0 | 100 |
| Shares of associated enterprises | 163 | 328 | 4140941 | 0 | 100 | 2835454 | 0 | 100 | 0 | 0 | 0 |

This type of discrepancy, when the components of financial assets "Shares of corporate group companies" and "Shares of associated enterprises" are shown in the reverse rows of the statistical report or vice versa, is the most common discrepancy of all investigated cases. All three investigated companies had this type of discrepancy. This is due to the fact that when completing the General Ledger, the company accounts for the components of these financial assets in one register, and only when concluding the balance sheet it transfers part of those financial assets components to another balance sheet line. As a result, filling in the statistical report and the SAF-T file differs.

**Table 7.** Discrepancies for amount payable variables

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company C | | |
|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Difference, % |
| Amounts payable after one year and other long-term liabilities | 42 | 410 | 11338 | 2742814 | -100 |
| Amounts to be paid within one year and other short-term liabilities | 44 | 419 | 2725994 | 100481 | 2613 |

Another common discrepancy for integrating data from SAF-T file to statistical report is observed in amounts payable after one year and within one year. The main remark is that according to accounting company can fill in amounts payable in one account name and when compiling balance sheet it can transfer these amounts to another account name. Like in this case for Company C amounts to be paid within one year in the General Ledger is accounted in this account name and when the company filled in the statistical report, which is based on the balance sheet, the corresponding amount is transferred to amounts payable after one year.

**Table 8.** Discrepancies for financial assets and short-term investment variables

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company C | | |
|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % |
| Financial assets | 16 | 302 | 616711 | 0 | 100 |
| Short-term investment | 26 | 322 | 0 | 616711 | -100 |

Examining the Company‘s C discrepancy in the indicators of financial assets and Short-term investment it can be stated, that when company registered financial assets in the General Ledger, it attributed these amounts to the financial assets account. While completing the statistical report the company attributed the corresponding amounts to the short-term investment account. According to the business accounting standards, this is not an error, as the company is allowed to record amounts in one account in the General Ledger and when filling in the balance sheet, to transfer all or part of the according account to another account.

**Table 9.** Discrepancies for retained earnings (loss) variable

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| Retained earnings (loss) | 34 | 406 | 4453281 | 4918046 | -9 | 1757802 | 2191360 | -20 | 0 | -144374 | -100 |

Value of the indicator “Retained earnings (loss)” in the SAF-T file and statistical report, for all three companies, differ from 9% to 100%. All companies showed less of retained earnings (loss) in General Ledger than in the statistical report. A closer look at the General Ledger's account for retained earnings (loss) revealed that only retained earnings (losses) from the previous year were included in this account, while retained earnings (loss) for the reporting year had not yet been included. This could happen due to the submission of the SAF-T file to the STI before the company had closed this account.

**Table 10.** Discrepancies for amounts to be paid and accrued charges and defferred income variables

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | |
|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| Amounts to be paid within one year and other short-term liabilities | 44 | 419 | 533952 | 605820 | -12 | 1266532 | 1367633 | -7 |
| Accrued charges and deferred income | 49 | 435 | 926341 | 854473 | 8 | 361526 | 260424 | 39 |

In companies A and B, the discrepancies between "Amounts to be paid within one year and other short-term liabilities" and "Accrued charges and deferred income" differ on the same amounts, with a difference of EUR 71868 in company A and EUR 101102 in company B. The reason may again be the accounting for different amounts before and after the balance sheet is concluded.

**Table 11.** Discrepancies for sales cost and general and administrative expenses variables

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | |
|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % |
| Sales cost price | 60 | 604 | 0 | 3188243 | -100 |
| General and administrative expenses | 63 | 609 | 3224489 | 61990 | 5102 |

Having analyzed the company's A difference between “Sales cost price” and “General and administrative expenses” it can be stated that the company's account “General and administrative expenses” in the General Ledger was recorded before concluding the profit (loss) account and it causes the discrepancy. As in the earlier cases these differences occur due to the different requirements for filling in the General Ledger and financial accounts.

Analysis of the discrepancies between the indicators in the SAF-T file and the statistical report leads to the conclusion that most of the values of the corresponding indicators, when integrated from the SAF-T General Ledger accounts, are appropriate and can be successfully be integrated into the statistical report. The discrepancies between the relevant indicators that have been analyzed are due to the different accounting treatment of the amounts in the General Ledger and balance sheet and the profit and loss account. However, these differences are not very large or significant, which means that the values can be integrated into the statistical report. Sometimes companies, when filling in the statistical report, interpret it in their own way and may not always fill it in properly. So, it is much better to have data from the primary sources and fill in statistical report in the same way for all the companies. The overall conclusion is that data from the SAF-T file can be integrated into a statistical report, thus reducing the reporting burden on companies. The developed model for response burden reduction is presented in figure 25.

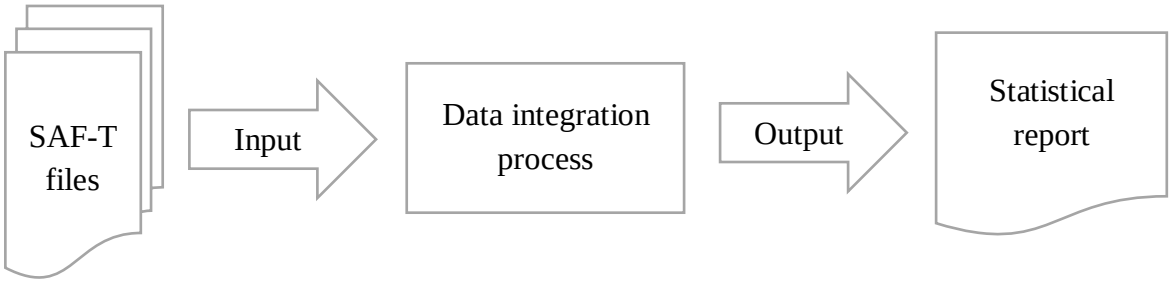


**Fig. 25.** The developed model for response burden reduction

The developed model for response burden reduction was sent to the experts to get their opinion about the response burden reduction model together with the questions that was listed in the methodological section. After received the experts' answers, they were examined and an interpretation of the opinions is provided below.

According to the auditor, the analysis of the content and numerical values of the respective indicators by comparing the data of the SAF-T file with the data of the statistical report is significant and performed logically. The auditor has highlighted several potential common problems which can occur during the data integration process:

- Intangible and tangible assets. In the statistical report, it is requested to indicate how many assets are acquired per year at cost. Meanwhile, statistical report indicators such as write-offs, sales, and

rewrites from one article to another are reported at the residual value of assets sold, which can often be zero, and therefore no figure will be shown in the statistical report at all. Whereas in the accounting, such assets are written-off by reducing the acquisition cost and accumulated depreciation. Therefore, changes in the cost of acquisition are affected not only by acquisitions of assets but also by sales, write-offs, and rewritings of assets. Consequently, the amounts calculated from the SAF-T file at cost at the end of the period less the cost at the beginning of the period will differ between the statistical report and the SAF-T file, if the company sells, writes-off or rewrites fixed assets during the year.

- Redistributions (mismatches) between financial assets, receivables, and payables. Very often in accounting company accounts for these amounts in one register, and only a part of the balance transfers to another balance sheet line when concluding the balance sheet. For example, when a wholesale trade company is selling some of its goods to unrelated parties and some to other group companies, it records all receivables on sales in a single trade receivables register. When concluding the balance sheet, it shows receivables from unrelated customers in the line of trade receivables, and receivables from other group companies in the line "Receivables from group companies". No legislation prohibits a company from accounting in a way that is convenient for the company when filling in General Ledger. It is important that the amounts are correct and properly reflected in the balance sheet. The same is true for the redistribution between fixed and current assets (liabilities). The analogous situation is with the redistribution between income and expenses in the income statement.
- Discrepancies in retained earnings. The SAF-T file General Ledger may contain "not closed" income and expense account data for the reporting year. This means that in the SAF-T file, the retained earnings (loss) can be the retained earnings (loss) of the previous year. Retained earnings (loss) for the accounting year may be excluded here because the retained earnings (loss) are calculated as the difference between the income and costs accounts. Again, no legislation sets deadlines for the data to be "closed" and this could cause the discrepancies in this indicator.
- Work performed by (sub)contractors. If it would be an ideal case then integrating data to the statistical report indicators No. 533 and No. 534 from the SAF-T file, the works resulted in assets would be used by the buyer (customer) as its tangible fixed assets, the costs of the work performed by contractors and subcontractors would be recorded in account number 1261 "Works of construction (production) of tangible assets in progress". Once the assets would have been released for use, the costs would be transferred to the corresponding fixed assets accounts.
- If an asset would be created and the customer intends to sell it, the cost of the work performed would be accumulated in account number 2021 "Works in progress". After the completion of the production of that asset, the expenditure would be transferred to account number 203 "Production".
- However, companies sometimes accumulate costs for work performed by contractors and subcontractors in other inventory accounts. Where the debt for the work performed will be shown depends on who performed the work and how long the debt will have to be repaid. This can be shown in the General Ledger accounts classification lines such as "Trade accounts payable" (No. 424 or No. 443), "Payables to enterprises of the corporate group" (No. 426 or No. 445), "Payables to associated enterprises" (No. 427 or No. 446), "Other payables and long-term liabilities"(No. 428 or No. 449).

By another expert, the head of the business statistics research opinion, the integration of the data from the SAF-T files into the statistical report and the compilation of the Balance Sheet and Profit and Loss Statement indicators for the statistical purposes is fully justified and correct. According to the expert, it is more challenging to achieve the integration of the data for the statistical indicators that do not directly correspond

to the content of the accounts or sub-accounts used in the General Ledger of the SAF-T files. Another concern is that more detailed sub-accounts are not standardized. For example, the compilation of the purchases or revenue indicators by activity is not always possible to achieve or their accuracy is not fully justified. To achieve this goal, an analysis of larger amount of companies and a wider range of data is needed.

Further summarizing the experts opinions on the applicability of the model in practice, it was mentioned that the use of SAF-T system data for statistical purposes would be rational if the data from the SAF-T files would be generated automatically. Now it can be seen that the data integration process for the statistical indicators is not fully achievable automatically yet.

In terms of improving the model, if companies would provide data to the STI on a regular basis and not only at the request of the STI, as it is now, it would be possible to refuse the collection of such statistical indicators that correspond to the (sub) accounts of the General Ledger and collect them straight from the SAF-T files. For other indicators, a broader and more comprehensive analysis of the data should be carried out.

Potential challenges in applying the model in reality at this time would be the automation of SAF-T data sub-accounts and the deadlines for obtaining the data itself. As at present, companies provide SAF-T files to the STI only upon request of the STI, and for statistical purposes, the entire population of the companies has to be available. Therefore, this requires closer cooperation with the STI, NSI, and the companies themselves. In the future, having close cooperation together with NSI, STI, and companies would undoubtedly create a real opportunity to apply this model to reduce the response burden.

### 4.4. Suggestions for stakeholders and particular recommendations (4 stage)

This subsection will cover suggestions and recommendations for the beneficial stakeholders and conclusions of the overall methodology section.

The main three beneficial stakeholders are Companies, State Tax Inspectorate, and National Statistical Institute. Having implemented the developed response burden reduction model first of all part of the response burden would be reduced for companies as they could decrease the number of statistical reports which are required by NSI to fill in. If in the future, the collaboration between companies, STI and NSI due to data gathering process will be successful, and would give an opportunity for companies to provide SAF-T files to STI on mandatory, then the NSI would have an opportunity to use these data for statistical purposes and the benefit would be obvious. The response burden for companies would be reduced, the STI could have more cases for tax inspection, and the NSI would have a lot of data from primary sources that could be used to make a statistical report by themself.

Below are listed the suggestions and recommendations for the beneficial stakeholders:

- Three main stakeholders STI, NSI and companies should closely collaborate to make the data collection process into the SAF-T system mandatory. Then NSI could automate the data collection process and collect data for statistical reports based on accounting data automatically from SAF-T system and thus automatically integrate data for the statistical report. Meanwhile, mandatory reporting of data for companies to the SAF-T system would reduce the response burden for them. Companies would no longer be required to submit certain statistical reports to the NSI. Moreover, this data could be used by other authorities to whom companies also have the obligation to provide this kind of information and the response burden could be reduced even more.
- STI in collaboration with NSI should have to find the opportunities to standardize General Ledger sub-accounts as much as possible. Then it would be possible to automate the data integration process

for those statistical report indicators that do not have direct compliance with the indicators in the standard classification of accounts in SAF-T files.

- NSI should make the process of retrieving data from STI and integrating data from SAF-T files into the relevant statistical reports in an automated way. This would make it possible to speed up the deadlines for publishing statistical data. Statistical data are used by the majority of users, such as researchers, companies, various public bodies that make decisions from statistical information. The earlier statistical data publication would accelerate decision-making.

In concluding the overall methodology and practical use of developed response burden reduction model it can be stated that it is done a first step towards dealing with data from SAF-T files for reducing the response burden for companies and improving the data gathering process in the NSI. As the standard accounting data collection and management subsystem SAF-T has been recently developed and is still being developed in Lithuania by STI and no research has been done on how this standard tax audit file could be used for statistical purposes to reduce the response burden on companies it was very important to do such research and investigate the possibilities to integrate data from AIS to statistical information system. This process should be improved by contributing NSI and STI together. Institutions should look in the same direction in the future on how to minimize the response burden for companies. The pilot study showed that the response burden is really an issue for companies. They devote most of their resources for filling in the statistical reports and it creates a response burden for them. Data given by STI allowed to investigate the SAF-T files and take a closer look at indicators content respective to the statistical report indicators. The compliance of the content of the indicators from the SAF-T file with the indicators of the statistical report showed that most of the content of the indicators was fully compatible with the statistical report. With certain exceptions data from SAF-T files could be successfully integrated into the statistical report. Interview of the experts approved the developed response burden reduction model with some important comments on the model regarding the correct integration of the data from the SAF-T file to the statistical report.

**Conclusions**

The following conclusions are formulated based on the problem analysis, theoretical solutions and research findings for the response burden reduction in relation to AIS:

1. The analysis of the problem of reducing the response burden allowed to reveal and understand the concept of the response burden itself from various perspectives. From the company's perspective, response burden was defined as a cost incurred by the company when compiling the data in accordance with the law to various authorities. From the government side, the response burden was considered about the measure which can be adopted in order to have an effective tool for dealing with administrative burden. From the NSI perspective, the response burden meant the number of statistical reports per company or household. In general, the response burden is about costs, volume, time and data quality.
   Overall, the response burden concept was divided into two main concepts: objective and subjective response burden. Objective response burden meant an actual response burden that was measured by time or money while the subjective response burden meant a perceived response burden and was referred to a companies estimation on how it was difficult to produce the requested data.
   The main idea of response burden reduction was the automation of the data gathering process by integrating data from one system to another system. The analysis of the problem showed that it is a lack of information on how to integrate data from accounting information systems into statistical questionnaires using data standardization tools. Thus it showed again that the problem is relevant and can be examined in more detail.

2. Having examined the theoretical aspects of data integration that was closely related to response burden and its reduction possibilities it was found that the ability to integrate company's AIS data into other information systems would significantly reduce the response burden for the company and facilitate data gathering process for the government institutions, especially for National Statistical Institute.
   Another important aspect of the data integration process is the ability by integrating data from multiple sources to provide a complete picture of the statistical survey, as the data would be collected from the entire companies' population.
   The analysis of the problem revealed that in order to reduce the response burden, the data collection process must be automated in a continuous data management chain. To implement such a mechanism, technical standardization of data, harmonization of concepts between data providers and data recipients is required. As the solution for data standardization three main well-known and widely accepted standards were proposed – XML, XBRL, and SAF-T.
   The theoretical solution for response burden reduction in relation to AIS showed how AIS has changed a lot in the context of digitalization. The main points with respect to AIS changes were confidentiality, integrity and availability of data, information reliability and security. Digitalization facilitates operations, providing much faster and more convenient access to the needed information. The digitalization of public services, driven by the need to modernize, reduce costs and deliver innovative services, opens up further opportunities for improving data storage, transmission, processing and analysis.
   A created conceptual model for response burden reduction allowed to understand the response burden and how through the data integration process the response burden can be reduced for companies. Based on this conceptual model, a methodology for response burden reduction in relation to AIS was developed.

3. As there is a lack of information in Lithuania on how to use SAF-T file data to solve response burden reduction problems for companies, the possibility of integrating SAF-T system data into the statistical report structure was analyzed to meet this need and methodological access of the research was presented. Four stages of the methodology of empirical research for response burden reduction improvement was presented. The first stage covered the reasoning of the research and the survey instruments. The second stage reviewed the analysis of data integration possibilities. The third stage included a model of the statistical report with integrated data and the last stage was about conclusions of the methodology for response burden reduction in relation to AIS.

4. The research was carried out in four stages through which the reasoning of the research was grounded by pilot survey. Analysis of data integration possibility was carried out by case study which proves that the content of indicators from SAF-T files and statistical report is compliant in most cases. The model for response burden reduction was developed by integrating numerical values from relevant indicators from SAF-T file to the relevant indicators from statistical report. Qualified experts had approved the model for practical application. In order to apply this model in practice a list of recommendations and suggestions for beneficial stakeholders was listed. The suggestions were as follows:

   - Three main stakeholders State Tax Inspectorate, National Statistical Institute, and Companies should closely collaborate to make the data collection process into the SAF-T system mandatory.
   - State Tax Inspectorate in collaboration with the National Statistical Institute should have to find the opportunities to standardize General Ledger sub-accounts in SAF-T files as much as possible.
   - National Statistical Institute should make the process of retrieving data from SAF-T files and integrating data into the relevant statistical reports automatically.

   One of the further directions would be a broader analysis of data from the SAF-T system to assess more accurately the correspondence of those indicators that do not currently have a one-to-one correspondence in the SAF-T file.

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## Appendices

### Appendix 1. Questionnaire about SAF-T subsystem usefulness for response burden reduction

SAF-T subsystem is a Standardized Accounting Data Collection and Management Subsystem developed by State Tax Inspectorate (STI) to increase the efficiency of STI activities in the field of tax assessment and payment control, by standardizing and automating the inconvenient way of submitting paper accounting data to the tax administrator, ensuring faster, more efficient processing and more accurate assessment, thus reducing the administrative burden on taxpayers.
The purpose of this questionnaire is to gather opinions from companies about SAF-T subsystem usability for response burden reduction for the National Statistical Institute (NSI) purposes.

1. **How big is your company?**
   - 1-9 employees
   - 10-19 employees
   - 20-49 employees
   - 50-249 employees
   - 250 and more employees

2. **What economic activity does your company carry out?**
   - Industrial
   - Construction
   - Retail / wholesale trade
   - Services
   - Other

3. **Do you (or your colleagues) prepare and provide data for the National statistical institute (NSI)?**
   - Yes (Go to question number 4)
   - No (Go to question number 7)
   - I don't know if my company provides the data for the NSI (Go to question number 7)

4. **How many statistical questionnaires on average do you (or your colleagues) prepare and provide for NSI in a year?**
   - < 5
   - 5 to 10
   - > 10

5. **How long does it take on average to prepare and provide data for NSI?**
   - < 1 hour
   - 1 to 2 hours
   - 2 to 4 hours
   - 4 to 8 hours
   - > 8 hours

6. **How would you measure the response burden for the NSI in percentage? (1% – small burden; 100% – hudge burden)**
   - Write your answer here:

7. **Do you know about SAF-T subsystem and the obligation to provide standardized accounting files for State Tax Inspectorate?**
   - Yes
   - No

8. **Would you agree to submit the data to the STI voluntarily if NSI would have the opportunity to use it and integrate it into the statistical reports so that you would no longer need to fill in the particular statistical report?**
   - Yes
   - No
   - Maybe

9. **Please, briefly write your opinion about the burden reduction instruments for companies that NSI could provide.**
   - Write your answer here:

10. **In your opinion, could the data you submit to other institutions be used to fill in statistical reports and reduce the response burden?**
    - Write your answer here:

## Appendix 2. Account type table of the General Ledger

| Item index | 2.1.1.3. *AccountTableID* | | | 2.1.1.4. *AccountTableDescription* |
|---|---|---|---|---|
| 1. | **1** | **NON-CURRENT ASSETS** | | |
| 1.1. | | 11 | | Intangible assets |
| 1.1.1. | | | 111 | Development works |
| 1.1.1.1. | | | | 1110 Development costs |
| 1.1.1.2. | | | | 1118 Development amortization (-) |
| 1.1.1.3. | | | | 1119 Development impairment (-) |
| 1.1.2. | | | 112 | Goodwill |
| 1.1.2.1. | | | | 1120 Goodwill acquisition cost price |
| 1.1.2.2. | | | | 1128 Amortization of goodwill (-) |
| 1.1.2.3. | | | | 1129 Goodwill impairment (-) |
| 1.1.3. | | | 113 | Software |
| 1.1.3.1. | | | | 1130 Software acquisition cost price |
| 1.1.3.2. | | | | 1138 Software amortization (-) |
| 1.1.3.3. | | | | 1139 Software impairment (-) |
| 1.1.4. | | | 114 | Concessions, patents, licenses, trademarks and similar rights |
| 1.1.4.1. | | | | 1140 Concessions, patents, licenses, trademarks and similar rights acquisition cost price |
| 1.1.4.2. | | | | 1148 Concessions, patents, licenses, trademarks and similar rights amortization (-) |
| 1.1.4.3. | | | | 1149 Concessions, patents, licenses, trademarks and similar rights impairment (-) |
| 1.1.5. | | | 115 | Other intangible assets |
| 1.1.5.1. | | | | 1150 Costs of other intangible assets acquisition |
| 1.1.5.2. | | | | 1158 Amortization of other intangible assets (-) |
| 1.1.5.3. | | | | 1159 Impairment of other intangible assets (-) |
| 1.1.6. | | | 116 | Advances paid for intangible assets |
| 1.2. | | 12 | | Tangible assets |
| 1.2.1. | | | 120 | Land |
| 1.2.1.1. | | | | 1200 Land acquisition cost price |
| 1.2.1.2. | | | | 1201 Change in land value due to revaluation |
| 1.2.1.3. | | | | 1209 Land impairment (-) |
| 1.2.2. | | | 121 | Buildings and structures |
| 1.2.2.1. | | | | 1210 Building and structure acquisition cost price |
| 1.2.2.2. | | | | 1211 Change in value of buildings and structures due to revaluation |
| 1.2.2.3. | | | | 1212 Buildings and structures prepared for use |
| 1.2.2.4. | | | | 1217 Depreciation of buildings and structures acquisition cost price (-) |
| 1.2.2.5. | | | | 1218 Depreciation of change in value of buildings and structures due to revaluation (-) |
| 1.2.2.6. | | | | 1219 Building and structure impairment (-) |
| 1.2.3. | | | 122 | Machinery and equipment |
| 1.2.3.1. | | | | 1220 Machinery and equipment acquisition cost price |
| 1.2.3.2. | | | | 1221 Change in value of machinery and equipment due to revaluation |
| 1.2.3.3. | | | | 1222 Machinery and equipment prepared for use |
| 1.2.3.4. | | | | 1227 Depreciation of machinery and equipment acquisition cost price (-) |
| 1.2.3.5. | | | | 1228 Depreciation of change in value of machinery and equipment due to revaluation (-) |
| 1.2.3.6. | | | | 1229 Machinery and equipment impairment (-) |
| 1.2.4. | | | 123 | Vehicles |
| 1.2.4.1. | | | | 1230 Vehicle acquisition cost price |
| 1.2.4.2. | | | | 1231 Change in value of vehicles due to revaluation |
| 1.2.4.3. | | | | 1232 Vehicles prepared for use |
| 1.2.4.4. | | | | 1237 Depreciation of vehicle acquisition cost price (-) |
| 1.2.4.5. | | | | 1238 Depreciation of change in value of vehicles due to revaluation (-) |
| 1.2.4.6. | | | | 1239 Vehicle impairment (-) |
| 1.2.5. | | | 124 | Other devices, appliances and tools |
| 1.2.5.1 | | | | 1240 Other devices, appliances and tools acquisition cost price |
| 1.2.5.2 | | | | 1241 Change in value of other devices, appliances and tools due to revaluation |
| 1.2.5.3 | | | | 1242 Other devices, appliances and tools prepared for use |
| 1.2.5.4 | | | | 1247 Depreciation of other devices, appliances and tools acquisition cost price (-) |
| 1.2.5.5 | | | | 1248 Depreciation of change in value of other devices, appliances and tools due to revaluation (-) |
| 1.2.5.6 | | | | 1249 Other devices, appliances and tools impairment (-) |
| 1.2.6. | | | 125 | Investment assets |
| 1.2.6.1 | | | | 1250 Land as investment assets |
| 1.2.6.1.1. | | | | 12500 Acquisition cost price of land as investment assets |
| 1.2.6.1.2. | | | | 12503 Change in a fair value of land as investment assets (+/-) |
| 1.2.6.1.3. | | | | 12509 Land as investment assets impairment (-) |
| 1.2.6.2. | | | | 1251 Buildings as investment assets |
| 1.2.6.2.1. | | | | 12510 Acquisition costs price of buildings as investment assets |
| 1.2.6.2.2. | | | | 12513 Change in a fair value of buildings as investment assets (+/-) |
| 1.2.6.2.3. | | | | 12517 Depreciation of acquisition cost price of buildings as investment assets (-) |
| 1.2.6.2.4. | | | | 12519 Buildings as investment assets impairment (-) |
| 1.2.7. | | | 126 | Advances paid and works of construction (production) of tangible assets in progress |
| 1.2.7.1. | | | | 1260 Advances paid for non-current tangible assets |

| Item index | 2.1.1.3. *AccountTableID* | 2.1.1.4. *AccountTableDescription* |
|---|---|---|
| 1.2.7.2. | 1261 | Works of construction (production) of tangible assets in progress |
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| 4.3.3.2. | | | | 4231 | Cash advances received from service recipients |
| 4.3.4. | | | 424 | Trade accounts payable | |
| 4.3.5. | | | 425 | Payables as per promissory notes and cheques | |
| 4.3.6. | | | 426 | Payables to enterprises of corporate group | |
| 4.3.6.1. | | | | 4260 | Payables to the parent company |
| 4.3.6.2. | | | | 4261 | Payables to subsidiaries |
| 4.3.7. | | | 427 | Payables to associated enterprises | |
| 4.3.8. | | | 428 | Other payables and long-term liabilities | |
| 4.4. | | 44 | Amounts to be paid within one year and other short-term liabilities | | |
| 4.4.1. | | | 440 | Debt liabilities | |
| 4.4.1.1. | | | | 4400 | Debts as per non-equity securities |
| 4.4.1.2. | | | | 4401 | A current year part of leasing (financial lease) or similar liabilities |
| 4.4.1.3. | | | | 4402 | Liabilities arising from financial derivatives |
| 4.4.1.4. | | | | 4403 | A current year part of other long term debts |
| 4.4.1.5. | | | | 4404 | Other debt liabilities |
| 4.4.2. | | | 441 | Debts to credit institutions | |
| 4.4.2.1. | | | | 4410 | Liabilities under short-term loan agreements |
| 4.4.2.2. | | | | 4411 | A current year part of debts to credit institutions |
| 4.4.2.3. | | | | 4413 | Other liabilities |
| 4.4.3. | | | 442 | Advances received | |
| 4.4.3.1. | | | | 4420 | Advances received from customers |
| 4.4.3.2. | | | | 4421 | Advances received from service recipients |
| 4.4.4. | | | 443 | Trade accounts payable | |
| 4.4.4.1. | | | | 4430 | Trade accounts payable for products and services |
| 4.4.4.2. | | | | 4431 | Other trade accounts payable |
| 4.4.5. | | | 444 | Payables as per promissory notes and cheques | |
| 4.4.6. | | | 445 | Payables to enterprises of corporate group | |
| 4.4.6.1. | | | | 4450 | Payables to the parent company |
| 4.4.6.2. | | | | 4451 | Payables to subsidiaries |
| 4.4.7. | | | 446 | Payables to associated enterprises | |
| 4.4.8. | | | 447 | Corporate income tax liabilities | |
| 4.4.8.1. | | | | 4470 | Corporate income tax liabilities |
| 4.4.8.2. | | | | 4471 | Other similar liabilities |
| 4.4.9. | | | 448 | Employment related liabilities | |
| 4.4.9.1. | | | | 4480 | Payroll payable |
| 4.4.9.2. | | | | 4481 | Personal income tax payable |
| 4.4.9.3. | | | | 4482 | Social insurance contributions payable |
| 4.4.9.4. | | | | 4483 | Guarantee fund contributions payable |
| 4.4.9.5. | | | | 4484 | Other employee benefits |
| 4.4.9.6. | | | | 4485 | Accruals for annual leave pay |
| 4.4.9.7. | | | | 4486 | Compulsory health insurance contributions payable |
| 4.4.10. | | | 449 | Other payables | |
| 4.4.10.1. | | | | 4490 | Dividends payable |
| 4.4.10.2. | | | | 4491 | Profit sharings payable |
| 4.4.10.3. | | | | 4492 | Value added tax payable |
| 4.4.10.4. | | | | 4493 | Other taxes payable to the budget |
| 4.4.10.5. | | | | 4494 | Other payables |
| 4.4.10.6. | | | | 4495 | Amounts payable to business owners |
| 4.5. | | 49 | Accrued charges and deferred income | | |
| 4.5.1. | | | 491 | Accrued charges | |
| 4.5.2. | | | 492 | Deferred income | |
| 4.6. | | 43 | Other | | |
| 5. | **5** | | **INCOME** | | |
| 5.1. | | 50 | Sales income | | |
| 5.1.1. | | | 500 | Income from products and services | |
| 5.1.1.1. | | | | 5000 | Income from products sold |
| 5.1.1.2. | | | | 5001 | Income from services provided |
| 5.1.2. | | | 509 | Discounts, returns (−) | |
| 5.2. | | 51 | Income resulting from change in a fair value of biological assets | | |
| 5.3. | | 54 | Other operating income | | |
| 5.3.1. | | | | 5400 | Profit from transfer of non-current assets |
| 5.3.2. | | | | 5401 | Other income |
| 5.4. | | 55 | Income from investment in shares of the parent company, subsidiaries and associated enterprises | | |
| 5.4.1. | | | | 5500 | Dividends from investment in shares of the parent company, subsidiaries and associated enterprise |
| 5.4.2. | | | | 5501 | Profit from transfer of investment in shares of the parent company, subsidiaries and associated enterprise |
| 5.4. | | 56 | Income from other long-term investment and loans | | |
| 5.4.1. | | | | 5600 | Income from interest of other long-term investment and loans |

| Item index | 2.1.1.3. *AccountTableID* | 2.1.1.4. *AccountTableDescription* |
|---|---|---|
| 5.4.2. | 5601 | Profit from transfer of other long-term investment and loans |
| 5.4.3. | 5604 | Dividends from other long-term investment |
| 5.4.4. | 5609 | Other income |
| 5.5. | 58 | Other income from interest and similar income |
| 5.5.1. | 5802 | Income from interest of other loans granted |
| 5.5.2. | 5803 | Positive effect of exchange rate changes |
| 5.5.3. | 5804 | Income from fines and interest on arrears |
| 5.5.4. | 5805 | Profit resulting from financial derivatives |
| 5.5.5. | 5808 | Profit from increase in a fair value of investment |
| 5.5.6. | 5809 | Profit from transfer of investment |
| 5.5.7. | 5810 | Income from other financial and investment activity |
| 5.6. | 52 | Other |
| 6. | **6** | **EXPENSE** |
| 6.1. | 60 | Sales cost price |
| 6.1.1. | 600 | Cost price of products sold and services provided |
| 6.1.1.2. | 6000 | Cost price of products sold |
| 6.1.1.3. | 6001 | Cost price of services provided |
| 6.1.1.4. | 6002 | Cost price of products and services acquired |
| 6.1.1.5. | 6003 | Direct production costs |
| 6.1.1.6 | 6004 | Indirect production costs |
| 6.1.1.7. | 6005 | Increase / decrease in stock |
| 6.1.2. | 609 | Discounts, return (−) |
| 6.2. | 61 | Expense due to change in a fair value of biological assets |
| 6.3. | 62 | Sales costs |
| 6.3.1. | 6200 | Commissions to vendors |
| 6.3.2. | 6201 | Impairment of trade in buildings and equipment |
| 6.3.3. | 6202 | Service and product advertising costs |
| 6.3.4. | 6203 | Salaries of employees and related costs |
| 6.3.5. | 6204 | Costs of provisions |
| 6.3.6. | 6208 | Other sales costs |
| 6.3.7. | 6209 | Discounts obtained (−) |
| 6.4. | 63 | General and administrative expenses |
| 6.4.1. | 6300 | Lease costs |
| 6.4.2. | 6301 | Repair and maintenance costs |
| 6.4.3. | 6302 | Costs of pay-outs to the third parties |
| 6.4.4. | 6303 | Insurance costs |
| 6.4.5. | 6304 | Salaries of employees and related costs |
| 6.4.6. | 6305 | Profit sharings and other similar pay-outs |
| 6.4.7. | 6306 | Costs of depreciation of non-current tangible assets value |
| 6.4.8. | 6307 | Costs of amortization of intangible assets value |
| 6.4.9. | 6308 | Operating tax costs |
| 6.4.9.1. | 63080 | Property tax costs |
| 6.4.9.2. | 63081 | Costs of non-deductible value added tax |
| 6.4.9.3. | 63082 | Costs of eco tax |
| 6.4.9.4. | 63083 | Costs of other taxes |
| 6.4.10. | 6309 | Costs of impairment of assets |
| 6.4.10.1. | 63090 | Costs of impairment of trade accounts receivable |
| 6.4.10.2. | 63091 | Costs of impairment of inventories |
| 6.4.10.3. | 63092 | Costs of impairment of intangible assets |
| 6.4.10.4. | 63093 | Costs of impairment of non-current tangible assets |
| 6.4.10.5. | 63094 | Costs of impairment of other assets |
| 6.4.11. | 6310 | Costs of provisions |
| 6.4.12. | 6311 | Costs of fines and interest on arrears |
| 6.4.13. | 6312 | Other general and administrative expenses |
| 6.4.14. | 6313 | Discounts obtained (−) |
| 6.5. | 64 | Other operating costs |
| 6.5.1. | 6400 | Loss due to transfer of non-current assets |
| 6.5.2. | 6401 | Other costs |
| 6.6. | 67 | Impairment of financial assets and short-term investment |
| 6.6.1. | 6701 | Costs of impairment of non-current financial assets |
| 6.6.2. | 6702 | Costs of impairment of short-term investment |
| 6.7. | 68 | Interest expense and other similar expenses |
| 6.7.1. | 6800 | Interest expense of loans granted by enterprises of corporate group |
| 6.7.1.1. | 68001 | Interest expense of loans granted by the parent company |
| 6.7.1.2. | 68002 | Interest expense of loans granted by subsidiaries |
| 6.7.2. | 6801 | Interest expense of loans granted by associated enterprises |
| 6.7.3. | 6802 | Interest expense of loans granted by other companies |
| 6.7.4. | 6803 | Negative effect of exchange rate changes |
| 6.7.5. | 6804 | Costs of fines and interest on arrears |
| 6.7.6. | 6805 | Losses arising from financial derivatives |
| 6.7.7. | 6806 | Interest expenses for the assets acquired in the way of financial lease |
| 6.7.8. | 6808 | Losses of impairment of investment |
| 6.7.9. | 6809 | Losses due to transfer of investment |
| 6.7.10. | 6810 | Costs of other financial and investment activity |

| Item index | 2.1.1.3. *AccountTableID* | | | 2.1.1.4. *AccountTableDescription* |
|---|---|---|---|---|
| 6.8. | | 69 | | Corporate income tax and similar taxes |
| 6.8.1. | | | 6900 | Corporate income tax and similar taxes of reporting year |
| 6.8.2. | | | 6901 | Costs (income from) of deferred corporate income tax |
| 6.9. | | 65 | | Other |
| 7. | **7** | OTHER | | |

## Appendix 3. Statistical report F-01 (annual) (Partial)

### TURTAS

| Pilnos balanso formos eilutės | | Kodas | **Finansiniai metai** | **Praėję finansiniai metai** |
|---|---|---|---|---|
| A | | B | 1 | 2 |
| **A.** | **ILGALAIKIS TURTAS** | | | |
| 1. | Nematerialusis turtas | 300 | | |
| 2. | Materialusis turtas | 301 | | |
| 3. | Finansinis turtas (306, 307, 308, 326, 328, 330, 331, 332, 333 kodų suma) | 302 | | X |
| 3.1. | Įmonių grupės įmonių akcijos | 306 | | X |
| 3.2. | Paskolos įmonių grupės įmonėms | 308 | | X |
| 3.3. | Iš įmonių grupės įmonių gautinos sumos | 326 | | X |
| 3.4. | Asocijuotų įmonių akcijos | 328 | | X |
| 3.5. | Paskolos asocijuotoms įmonėms | 330 | | X |
| 3.6. | Iš asocijuotų įmonių gautinos sumos | 331 | | X |
| 3.7. | Ilgalaikės investicijos | 332 | | X |
| 3.8. | Po vienų metų gautinos sumos | 333 | | X |
| 3.9. | Kitas finansinis turtas | 307 | | X |
| 4. | Kitas ilgalaikis turtas (340–342 kodų suma) | 329 | | X |
| 4.1. | Atidėtojo pelno mokesčio turtas | 340 | | X |
| 4.2. | Biologinis turtas | 341 | | X |
| 4.3. | Kitas turtas | 342 | | X |
| **B.** | **TRUMPALAIKIS TURTAS** | | | |
| 1. | Atsargos (310, 311, 312, 313, 314, 316, 334 kodų suma) | 309 | | |
| 1.1. | Žaliavos, medžiagos ir komplektavimo detalės | 310 | | |
| 1.2. | Nebaigta produkcija ir vykdomi darbai | 311 | | |
| 1.3. | Produkcija | 312 | | |
| 1.4. | Pirktos prekės, skirtos perparduoti | 313 | | |
| 1.5. | Biologinis turtas | 334 | | |
| 1.6. | Ilgalaikis materialusis turtas, skirtas parduoti | 316 | | |
| 1.7. | Sumokėti avansai | 314 | | |

| | | | | |
|---|---|---|---|---|
| 2. | Per vienus metus gautinos sumos (318, 320, 335, 336 kodų suma) | 317 | | X |
| 2.1. | Pirkėjų skolos | 318 | | X |
| 2.2. | Įmonių grupės įmonių skolos | 335 | | X |
| 2.3. | Asocijuotų įmonių skolos | 336 | | X |
| 2.4. | Kitos gautinos sumos | 320 | | X |
| 3. | Trumpalaikės investicijos (337, 338 kodų suma) | 322 | | X |
| 3.1. | Įmonių grupės įmonių akcijos | 337 | | X |
| 3.2. | Kitos investicijos | 338 | | X |
| 4. | Pinigai ir pinigų ekvivalentai | 325 | | X |
| C | ATEINANČIŲ LAIKOTARPIŲ SĄNAUDOS IR SUKAUPTOS PAJAMOS | 339 | | X |
| | TURTAS, IŠ VISO | 327 | | X |

## NUOSAVAS KAPITALAS IR ĮSIPAREIGOJIMAI

| Pilnos balanso formos eilutės | | Kodas | **Finansiniai metai** |
|---|---|---|---|
| | A | B | 1 |
| **D.** | **NUOSAVAS KAPITALAS** | | |
| 1. | KAPITALAS | 440 | |
| | Turtą, kuris pagal įstatymus gali būti tik valstybės nuosavybė, atitinkantis kapitalas (pildo tik valstybės ir savivaldybės įmonės) | 409 | |
| 2. | Akcijų priedai | 402 | |
| 3. | Perkainojimo rezervas (rezultatai) | 404 | |
| 4. | Rezervai | 405 | |
| 5. | Nepaskirstytasis pelnas (nuostoliai /–/) | 406 | |
| **E.** | **DOTACIJOS, SUBSIDIJOS** | 407 | |
| **F.** | **ATIDĖJINIAI** | 408 | |
| **G.** | **MOKĖTINOS SUMOS IR KITI ĮSIPAREIGOJIMAI** | | |
| 1. | Po vienų metų mokėtinos sumos ir kiti ilglaikiai įsipareigojimai (411–415, 418, 431, 432 kodų suma) | 410 | |
| 1.1. | Skoliniai įsipareigojimai | 412 | |
| 1.2. | Skolos kredito įstaigoms | 411 | |
| 1.3. | Gauti avansai | 415 | |

| | | | |
|---|---|---|---|
| 1.4. | Skolos tiekėjams | 414 | |
| 1.5. | Pagal vekselius ir čekius mokėtinos sumos | 413 | |
| 1.6. | Įmonių grupės įmonėms mokėtinos sumos | 431 | |
| 1.7. | Asocijuotosioms įmonėms mokėtinos sumos | 432 | |
| 1.8. | Kitos mokėtinos sumos ir ilgalaikiai įsipareigojimai | 418 | |
| 2. | Per vienus metus mokėtinos sumos ir trumpalaikiai įsipareigojimai (421–427, 429, 433, 434 kodų suma) | 419 | |
| 2.1. | Skoliniai įsipareigojimai | 433 | |
| 2.2. | Skolos kredito įstaigoms | 421 | |
| 2.3. | Gauti avansai | 425 | |
| 2.4. | Skolos tiekėjams | 424 | |
| 2.5. | Pagal vekselius ir čekius mokėtinos sumos | 422 | |
| 2.6. | Įmonių grupės įmonėms mokėtinos sumos | 423 | |
| 2.7. | Asocijuotosioms įmonėms mokėtinos sumos | 434 | |
| 2.8. | Pelno mokesčio įsipareigojimai | 426 | |
| 2.9. | Su darbo santykiais susiję įsipareigojimai | 427 | |
| 2.10. | Kitos mokėtinos sumos ir trumpalaikiai įsipareigojimai | 429 | |
| **H.** | **SUKAUPTOS SĄNAUDOS IR ATEINANČIŲ LAIKOTARPIŲ PAJAMOS** | **435** | |
| | **NUOSAVAS KAPITALAS IR ĮSIPAREIGOJIMAI, IŠ VISO** | **430** | |

## PIRKIMAI

| | Kodas | Per finansinius metus | |
|---|---|---|---|
| | | **Iš viso** | iš jų įmonių grupės įmonių Lietuvoje* |
| A | B | 1 | 2 |
| **Pirkta atsargų (žaliavų, prekių) ir paslaugų (501, 511–534, 536, 540 ir 541 kodų suma)** | **550** | |
| iš jų žaliavos, medžiagos, kuras ir kt. | 501 | | |
| iš jų kuras (anglis, naftos produktai, gamtinės dujos, malkos, biomasė ir pan.; neįskaitomas kuras, pirktas kaip žaliava tolimesniam perdirbimui) | 507 | | |
| prekės, skirtos perparduoti | 540 | | |
| paslaugos, skirtos perparduoti | 541 | | |
| elektra panaudota įmonės reikmėms | 511 | | |

| | | | |
|---|---|---|---|
| šiluma panaudota įmonės reikmėms | 512 | | |
| įdarbinimo agentūrų darbuotojų darbo paslaugos (mokėjimai agentūroms už jų darbuotojų darbą įmonėje) | 522 | | |
| ilgalaikio materialiojo turto nuoma | 526 | | |
| (sub)rangovų atlikti statybos darbai<br>(pildo statybos veiklą vykdančios įmonės, įskaitant ir statybų plėtra užsiimančias įmones) | 533 | | |
| (sub)rangovų atlikti kiti darbai (ne statybos), kuriuos atlieka kita įmonė pagal subrangos sutartis ir pagal Jūsų kaip užsakovo pateiktas technines sąlygas ir dažniausiai iš Jūsų medžiagų ir kurie yra Jūsų produkcija | 534 | | |
| kitos paslaugos<br>(informacinių technologijų, pašto ir pasiuntinių, transporto ir logistikos, rinkotyros, reklamos, teisinės, apskaitos ir audito, verslo valdymo, personalo mokymo ir darbuotojų sveikatos, turto ir gyvybės draudimo, finansinės, architektūros, inžinerijos ir susijusios techninės konsultacijos, pramoninio valymo ir apsaugos, mašinų, įrenginių ir pastatų techninės priežiūros ir remonto bei ir kitos paslaugos) | 536 | | |

* 2 skiltį pildo įmonės, kurios:

1. priklauso įmonių grupei. **Įmonių grupė** – patronuojančioji įmonė ir jos patronuojamosios įmonės.
2. pirko atsargas (žaliavas, prekes, pagamintą produkciją ir pan.) ir (ar) paslaugas iš įmonių grupės įmonių, kurios registruotos Lietuvoje.

## PAJAMOS, SĄNAUDOS, PELNAS

| Pilnos pelno (nuostolių) ataskaitos eilutės | | Kodas | **Per metus** |
|---|---|---|---|
| | A | B | 1 |
| 1. | Pardavimo pajamos | 600 | |
| | iš jų pajamos iš statybos subrangos darbų (pildo tik statybos veiklos įmonės) | 601 | |
| | akcizas, įskaitytas į pajamas, pardavus prekes Lietuvoje<br>(pildo įmonės, kurios turi prievolę mokėti akcizą į Valstybės biudžetą ir pagal įmonės apskaitos politiką akcizą įtraukia į pardavimo pajamas) | 603 | |
| 2. | Pardavimo savikaina* | 604 | |
| | iš jos prekių, skirtų perparduoti, įsigijimo vertė (be akcizo)* | 605 | |
| 3. | Biologinio turto tikrosios vertės pokytis | 637 | |
| 4. | Bendrasis pelnas (nuostoliai) (kodas 600 + kodas 604 + kodas 637) | 606 | |
| 5. | Pardavimo sąnaudos* | 608 | |
| 6. | Bendrosisios ir administracinės sąnaudos* | 609 | |
| | Kitos (netipinės) veiklos pajamos | 611 | |
| | iš jų pajamos, gautos pardavus prekes, skirtas perparduoti | 613 | |
| | ilgalaikio turto perleidimo, nurašymo ir mainų pelnas | 614 | |
| | Kitos (netipinės) veiklos sąnaudos* | 615 | |
| | iš jų ilgalaikio turto perleidimo, nurašymo ir mainų nuostoliai* | 616 | |
| 8. | Investicijų į patronuojančiosios, patronuojamųjų ir asocijuotų įmonių akcijas pajamos | 631 | |
| 9. | Kitų ilgalaikių investicijų ir paskolų pajamos | 632 | |

| | | | |
|---|---|---|---|
| 10. | Kitos palūkanų ir panašios pajamos | 633 | |
| 11. | Finansinio turto ir trumpalaikių investicijų vertės sumažėjimas | 635 | |
| 12. | Palūkanų ir kitos panašios sąnaudos* | 636 | |
| | iš jų banko palūkanų sąnaudos* | 622 | |
| 13. | Pelnas (nuostoliai /–/) prieš apmokestinimą (606, 608, 609, 611, 615, 631, 632, 633, 635, 636 kodų suma) | 625 | |
| 14. | Pelno mokestis* | 626 | |
| 15. | Grynasis pelnas (nuostoliai /–/) (625 ir 626 kodų suma) | 627 | |

* Sąnaudos ir pelno mokestis, t. y. grynąjį pelną mažinanti suma, įrašomi su minuso ženklu

**ILGALAIKIS MATERIALUSIS TURTAS** (balansine (likutine) verte)

| | Kodas | Iš viso | Vykdomi materialiojo turto statybos (gamybos) darbai | Žemė | Negyvenamieji pastatai | Gyvenamieji pastatai | Statiniai | Mašinos ir įrabga | Transporto priemonės | Kiti įrenginiai,pri etaisai ir įrankiai |
|---|---|---|---|---|---|---|---|---|---|---|
| A | B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| **Ilgalaikis materialusis turtas metų pradžioje *** (atitinka 301 kodo 2 skl. ir Balanso A.2.– A.2.7. straipsnius) | **1100** | | | | | | | | | |
| Nupirkta, pastatyta, rekonstruota, sure-montuota per metus (įskaitant turtą, įsigytą išperkamosios nuomos būdu) | 1135 | | | | | | | | | |
| iš jo naujas | 1102 | | | X | | | | | | |
| Pasigaminta, pasistatyta (susiremon- tuota) savo jėgomis naudoti sau | 1104 | | | X | | | | | | |
| Įsigyta turto įmonėms susijungus, parduota (–) įmonėms išsiskyrus | 1110 | | | | | | | | | |
| Kitu būdu gauta (dovanota, įsigyta mai- nais, gauta turto patikėjimo teise valdyti, perkelta turto iš atsargų ir kt.) | 1118 | | | | | | | | | |
| Nurašyta | 1113 | | | | | | | | | |
| Parduota | 1114 | | | | | | | | | |
| Perrašyta iš vieno straipsnio į kitą, įskaitant turtą, baigtą statyti, rekonstruoti ir remontuoti ataskaitiniais metais ir perrašytą į tam tikrą turto rūšies straipsnį (visa statomo objekto, rekonstravimo ar remonto darbų verte), +/– | 1130 | X | | | | | | | | |
| Vertės pokytis dėl perkainojimo (parodoma, kai turtas apskaitomas perkainuota verte, +/–) | 1131 | | | | | | | | | |
| Apskaičiuota nusidėvėjimo per metus | 1115 | | X | X | | | | | | |
| Vertės sumažėjimas | 1133 | | | | | | | | | |
| **Ilgalaikis materialusis turtas metų pabaigoje** (atitinka 301 kodo 1 skl. ir balanso A.2.– A.2.7. straipsnius) (1100 + 1135 + 1104 + 1110 + 1118 – 1113 –1114 + 1130 + 1131 – 1115 – 1133) | **1116** | | | | | | | | | |

***** Ilgalaikį materialųjį turtą, įtrauktą į **„Investicinį turtą“** ir **„Sumokėtus avansus“** , prašome pridėti prie atitinkamos turto rūšies.

**ILGALAIKIS NEMATERIALUSIS TURTAS** (balansine (likutine) verte)

| | Kodas | **Iš viso** | Plėtros darbai | Prestižas | Programinė įranga | Koncesijos, patentai, licenzijos, prekių ženklai ir panašios teisės | Kitas nematerialusis turtas |
|---|---|---|---|---|---|---|---|
| A | B | 1 | 2 | 3 | 4 | 5 | 6 |
| **Ilgalaikis nematerialusis turtas metų pradžioje** (atitinka 300 kodo 2 skl. ir balanso A.1.– A.1.6. straipsnius) | **1200** | | | | | | |
| Įsigyta per metus (įskaitant įsigytą išperkamosios nuomos būdu) | 1212 | | | X | | | |
| Pasigaminta savo jėgomis naudoti sau | 1213 | | | X | | | |
| Kitu būdu gauta (gauta turto nemokamai, patikėjimo teise valdyti, dovanota, įsigyta mainais ir kt.) | 1210 | | | | | | |
| Įsigyta turto įmonėms susijungus, parduota (–) įmonėms išsiskyrus | 1203 | | | | | | |
| Nurašyta | 1205 | | | | | | |
| Parduota | 1208 | | | X | | | |
| Perrašyta iš vieno straipsnio į kitą | 1202 | X | | X | | | |
| Apskaičiuota amortizacijos per metus | 1206 | | | | | | |
| Vertės sumažėjimas | 1204 | | | | | | |
| **Ilgalaikis nematerialusis turtas metų pabaigoje** (atitinka 300 kodo 1 skl. ir balanso A.1.– A.1.6. straipsnius) (1200 + 1212 + 1213 + 1210 + 1203 –1205 – 1208 + 1202 – 1206 – 1204) | **1207** | | | | | | |

***** Ilgalaikį nematerialųjį turtą **Balanse** apskaitytą kaip **„Sumokėti avansai“**, prašome pridėti prie atitinkamos turto rūšies.

## Appendix 4. The comparison of the indicators from the SAF-T files and the statistical report

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| | **ILGALAIKIS TURTAS / NON-CURRENT ASSETS** | | | |
| 300 | Nematerialusis turtas / Intangible assets | 11 | Intangible assets | F |
| 301 | Materialusis turtas / Tangible assets | 12 | Tangible assets | F |
| 302 | Finansinis turtas / Financial assets | 16 | Financial assets | F |
| 306 | Įmonių grupės įmonių akcijos / Shares of corporate group‘s companies | 160 | Shares of corporate group‘s companies | F |
| 308 | Paskolos įmonių grupės įmonėms / Loans granted to the enterprises of corporate group | 161 | Loans granted to the enterprises of corporate group | F |
| 326 | Iš įmonių grupės įmonių gautinos sumos / Receivables from the enterprises of corporate group | 162 | Receivables from the enterprises of corporate group | F |
| 328 | Asocijuotų įmonių akcijos / Shares of associated enterprises | 163 | Shares of associated enterprises | F |
| 330 | Paskolos asocijuotoms įmonėms / Loans granted to associated enterprises | 164 | Loans granted to associated enterprises | F |
| 331 | Iš asocijuotų įmonių gautinos sumos / Receivables from associated enterprises | 165 | Receivables from associated enterprises | F |
| 332 | Ilgalaikės investicijos / Long term investment | 166 | Long term investment | F |
| 333 | Po vienų metų gautinos sumos / Amounts to be received after one year | 167 | Amounts to be received after one year | F |
| 307 | Kitas finansinis turtas / Other financial assets | 168 | Other financial assets | F |
| 329 | Kitas ilgalaikis turtas / Other non-current assets | 17 | Other non-current assets | F |
| 340 | Atidėtojo pelno mokesčio turtas / Assets of deferred corporate income tax | 171 | Assets of deferred corporate income tax | F |
| 341 | Biologinis turtas / Biological assets | 172 | Biological assets | F |
| 342 | Kitas turtas / Other assets | 173 | Other assets | F |
| | **TRUMPALAIKIS TURTAS / CURRENT ASSETS** | | | |
| 309 | Atsargos / Inventories | 20 | Inventories | F |
| 310 | Žaliavos, medžiagos ir komplektavimo detalės / Raw materials, materials and mounting elements | 201 | Raw materials, materials and mounting elements | F |
| 311 | Nebaigta produkcija ir vykdomi darbai / Unfinished products and works in progress | 202 | Unfinished products and works in progress | F |
| 312 | Produkcija / Products | 203 | Products | F |
| 313 | Pirktos prekės, skirtos perparduoti / Products purchased for resale | 204 | Products purchased for resale | F |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| 334 | Biologinis turtas / Biological assets | 205 | Biological assets | F |
| 316 | Ilgalaikis materialusis turtas, skirtas parduoti / Non-current tangible assets for sale | 206 | Non-current tangible assets for sale | F |
| 314 | Sumokėti avansai / Advances paid | 208 | Advances paid | F |
| 317 | Per vienus metus gautinos sumos / Amounts to be received within one year | 24 | Amounts to be received within one year | F |
| 318 | Pirkėjų skolos / Trade accounts receivable | 241 | Trade accounts receivable | F |
| 335 | Įmonių grupės įmonių skolos / Debts of the enterprises of corporate group | 242 | Debts of the enterprises of corporate group | F |
| 336 | Asocijuotų įmonių skolos / Debts of associated enterprises | 243 | Debts of associated enterprises | F |
| 320 | Kitos gautinos sumos / Other receivables | 244 | Other receivables | F |
| 322 | Trumpalaikės investicijos / Short-term investment | 26 | Short-term investment | F |
| 337 | Įmonių grupės įmonių akcijos / Shares of corporate group‘s companies | 261 | Shares of corporate group‘s companies | F |
| 338 | Kitos investicijos / Other investment | 262 | Other investment | F |
| 325 | Pinigai ir pinigų ekvivalentai / Cash and cash equivalents | 27 | Cash and cash equivalents | F |
| 339 | ATEINANČIŲ LAIKOTARPIŲ SĄNAUDOS IR SUKAUPTOS PAJAMOS / Prepaid expense and accruals | 29 | Prepaid expense and accruals | F |
| 327 | TURTAS, IŠ VISO / TOTAL ASSETS | | | D |
| | **NUOSAVAS KAPITALAS / EQUITY** | | | |
| 440 | KAPITALAS / Capital | 30 | Capital | F |
| 409 | Turtą, kuris pagal įstatymus gali būti tik valstybės nuosavybė, atitinkantis kapitalas (pildo tik valstybės ir savivaldybės įmonės) / Capital corresponding to assets that under laws can be owned only by the state | 306 | Capital corresponding to assets that under laws can be owned only by the state | F |
| 402 | Akcijų priedai / Share premiums | 31 | Share premiums | F |
| 404 | Perkainojimo rezervas (rezultatai) / Revaluation reserve | 32 | Revaluation reserve | F |
| 405 | Rezervai /Reserves | 33 | Reserves | F |
| 406 | Nepaskirstytasis pelnas (nuostoliai /–/) / Retained earnings (loss) | 34 | Retained earnings (loss) | F |
| 407 | DOTACIJOS, SUBSIDIJOS / Grants and subsidies | 40 | Grants and subsidies | F |
| 408 | ATIDĖJINIAI / Provisions | 41 | Provisions | F |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| | **MOKĖTINOS SUMOS IR KITI ĮSIPAREIGOJIMAI / AMOUNTS PAYABLE AND OTHER LIABILITIES** | | | |
| 410 | Po vienų metų mokėtinos sumos ir kiti ilglaikiai įsipareigojimai / Amounts payable after one year and other long-term liabilities | 42 | Amounts payable after one year and other long-term liabilities | F |
| 412 | Skoliniai įsipareigojimai / Debt liabilities | 421 | Debt liabilities | F |
| 411 | Skolos kredito įstaigoms / Debts to credit institutions | 422 | Debts to credit institutions | F |
| 415 | Gauti avansai / Advances received | 423 | Advances received | F |
| 414 | Skolos tiekėjams / Trade accounts payable | 424 | Trade accounts payable | F |
| 413 | Pagal vekselius ir čekius mokėtinos sumos / Payables as per promissory notes and cheques | 425 | Payables as per promissory notes and cheques | F |
| 431 | Įmonių grupės įmonėms mokėtinos sumos / Payables to enterprises of corporate group | 426 | Payables to enterprises of corporate group | F |
| 432 | Asocijuotosioms įmonėms mokėtinos sumos / Payables to associated enterprises | 427 | Payables to associated enterprises | F |
| 418 | Kitos mokėtinos sumos ir ilgalaikiai įsipareigojimai / Other payables and long-term liabilities | 428 | Other payables and long-term liabilities | F |
| 419 | Per vienus metus mokėtinos sumos ir trumpalaikiai įsipareigojimai / Amounts to be paid within one year and other short-term liabilities | 44 | Amounts to be paid within one year and other short-term liabilities | F |
| 433 | Skoliniai įsipareigojimai / Debt liabilities | 440 | Debt liabilities | F |
| 421 | Skolos kredito įstaigoms / Debts to credit institutions | 441 | Debts to credit institutions | F |
| 425 | Gauti avansai / Advances received | 442 | Advances received | F |
| 424 | Skolos tiekėjams / Trade accounts payable | 443 | Trade accounts payable | F |
| 422 | Pagal vekselius ir čekius mokėtinos sumos / Payables as per promissory notes and cheques | 444 | Payables as per promissory notes and cheques | F |
| 423 | Įmonių grupės įmonėms mokėtinos sumos / Payables to enterprises of corporate group | 445 | Payables to enterprises of corporate group | F |
| 434 | Asocijuotosioms įmonėms mokėtinos sumos / Payables to associated enterprises | 446 | Payables to associated enterprises | F |
| 426 | Pelno mokesčio įsipareigojimai / Corporate income tax liabilities | 447 | Corporate income tax liabilities | F |
| 427 | Su darbo santykiais susiję įsipareigojimai / Employment related liabilities | 448 | Employment related liabilities | F |
| 429 | Kitos mokėtinos sumos ir trumpalaikiai įsipareigojimai / Other payables | 449 | Other payables | F |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| 435 | SUKAUPTOS SĄNAUDOS IR ATEINANČIŲ LAIKOTARPIŲ PAJAMOS / Accrued charges and deferred income | 49 | Accrued charges and deferred income | F |
| 430 | NUOSAVAS KAPITALAS IR ĮSIPAREIGOJIMAI, IŠ VISO / TOTAL EQUITY AND LIABILITIES | | | D |
| | **PIRKIMAI / PURCHASES** | | | |
| 550 | Pirkta atsargų (žaliavų, prekių) ir paslaugų, iš viso / Purchased stocks (raw materials, goods) and services, total | 6002 | Cost price of products and services acquired | D |
| 501 | iš jų žaliavos, medžiagos, kuras ir kt. / of which raw materials, materials, fuels, etc. | 6312 | Other general and administrative expenses | P |
| 507 | iš jų kuras / of which fuels | 6312 | Other general and administrative expenses | P |
| 540 | prekės, skirtos perparduoti / goods for resale | 6002 | Cost price of products and services acquired | P |
| 541 | paslaugos, skirtos perparduoti / services for reslae | 6002 | Cost price of products and services acquired | P |
| 511 | elektra panaudota įmonės reikmėms / electricity used for company purposes | 6301 | Repair and maintenance costs | P |
| 512 | šiluma panaudota įmonės reikmėms / heat used for company purposes | 6301 | Repair and maintenance costs | P |
| 522 | įdarbinimo agentūrų darbuotojų darbo paslaugos (mokėjimai agentūroms už jų darbuotojų darbą įmonėje) / employment services of employees of employment agencies (payments to agencies for the work of their employees in the company) | 6312 | Other general and administrative expenses | P |
| 526 | ilgalaikio materialiojo turto nuoma / rental of the long-term material assets | 6300 | Lease costs | F |
| 533 | (sub)rangovų atlikti statybos darbai / Construction work for (sub) contractors | 202, 203 | Unfinished products and works in progress, Products | P |
| 534 | (sub)rangovų atlikti kiti darbai (ne statybos), kuriuos atlieka kita įmonė pagal subrangos sutartis ir pagal Jūsų kaip užsakovo pateiktas technines sąlygas ir dažniausiai iš Jūsų medžiagų ir kurie yra Jūsų produkcija / other (non-construction) work carried out by (sub) contractors, | 202, 203 | Unfinished products and works in progress, Products | P |
| 536 | kitos paslaugos / other services | 62, 63 | Sales costs, General and administrative expenses | P |
| | **PAJAMOS, SĄNAUDOS, PELNAS / INCOME, EXPENSES, PROFIT** | | | |
| 600 | Pardavimo pajamos / Sales income | 50 | Sales income | F |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| 601 | iš jų pajamos iš statybos subrangos darbų (pildo tik statybos veiklos įmonės) / of which income from construction subcontracting | 5001 | Income from services provided | P |
| 603 | akcizas, įskaitytas į pajamas, pardavus prekes Lietuvoje / excise duty included in income from the sale of goods in Lithuania | 2446 | Other receivables | p |
| 604 | Pardavimo savikaina / Sales cost price | 60 | Sales cost price | F |
| 605 | iš jos prekių, skirtų perparduoti, įsigijimo vertė (be akcizo) / of which purchase value of goods for resale (excluding excise duty) | 204 | Products purchased for resale | P |
| 637 | Biologinio turto tikrosios vertės pokytis / Change in fair value of biological assets | 51 | Income resulting from change in a fair value of biological assets | F |
| 606 | Bendrasis pelnas (nuostoliai) / Gross profit (loss) | | | D |
| 608 | Pardavimo sąnaudos / Sales costs | 62 | Sales costs | F |
| 609 | Bendrosisios ir administracinės sąnaudos / General and administrative expenses | 63 | General and administrative expenses | F |
| 611 | Kitos (netipinės) veiklos pajamos / Other operaating income | 54 | Other operating income | F |
| 613 | iš jų pajamos, gautos pardavus prekes, skirtas perparduoti / of which income from the sale of goods for resale | 5401 | Other income | P |
| 614 | ilgalaikio turto perleidimo, nurašymo ir mainų pelnas / gains on disposals, write-offs and exchanges of fixed assets | 5400 | Profit from transfer of non-current assets | F |
| 615 | Kitos (netipinės) veiklos sąnaudos / Other operating costs | 64 | Other operating costs | F |
| 616 | iš jų ilgalaikio turto perleidimo, nurašymo ir mainų nuostoliai / of which losses on disposal, write-off and exchange of fixed assets | 6400 | Loss due to transfer of non-current assets | F |
| 631 | Investicijų į patronuojančiosios, patronuojamųjų ir asocijuotų įmonių akcijas pajamos / Income from investments in shares of parent, subsidiary and associate | 55 | Income from investment in shares of the parent company, subsidiaries and associated enterprises | F |
| 632 | Kitų ilgalaikių investicijų ir paskolų pajamos / Income from other long - term investments and loans | 56 | Income from other long-term investment and loans | F |
| 633 | Kitos palūkanų ir panašios pajamos / Other income from interest and similar income | 58 | Other income from interest and similar income | F |
| 635 | Finansinio turto ir trumpalaikių investicijų vertės sumažėjimas / Losses of impairment of investment | 67 | Losses of impairment of investment | F |
| 636 | Palūkanų ir kitos panašios sąnaudos / Interest expense and other similar expenses | 68 | Interest expense and other similar expenses | F |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| 622 | iš jų banko palūkanų sąnaudos / of which bank interest expense | 6800, 6801, 6802, 6806 | Interest expense of loans granted by enterprises of corporate group; Interest expense of loans granted by associated enterprises; Interest expense of loans granted by other companies; Interest expenses for the assets acquired in the way of financial lease | F |
| 625 | Pelnas (nuostoliai) prieš apmokestinimą / Profit (loss) before tax | | | D |
| 626 | Pelno mokestis / income taxe | 69 | Corporate income tax and similar taxes | F |
| 627 | Grynasis pelnas (nuostoliai) / Net profit (loss) | | | D |
| | **ILGALAIKIS MATERIALUSIS TURTAS (balansine (likutine) verte) / TANGIBLE FIXED ASSETS (carrying amount)** | | | |
| 1100 | Ilgalaikis materialusis turtas metų pradžioje / Long-term tangible assets at the beginning of the year | 12 | Tangible assets | F |
| 1135 | Nupirkta, pastatyta, rekonstruota, suremontuota per metus (įskaitant turtą, įsigytą išperkamosios nuomos būdu) / Purchased, constructed, reconstructed, repaired during the year (including leased assets) | 1200, 1220, 1230, 1240, 12500, 1260 | Land, Machinery and equipment, Vehicles, Other devices, appliances and tools acquisition cost price, Acquisition cost price of land as investment assets, Advances paid for non-current tangible assets | F |
| 1102 | iš jo naujas / of which new | 12610 | Non-current tangible assets under construction (produced) or reconstructed | F |
| 1104 | Pasigaminta, pasistatyta (susiremontuota) savo jėgomis naudoti sau / Finished, built (repaired) for self-use | 1261 | Works of construction (production) of tangible assets in progress | P |
| 1110 | Įsigyta turto įmonėms susijungus, parduota įmonėms išsiskyrus / Acquired assets after mergers, sold after divorce | - | - | - |
| 1118 | Kitu būdu gauta (dovanota, įsigyta mainais, gauta turto patikėjimo teise valdyti, perkelta turto iš atsargų ir kt.) / Received in another way (donated, acquired in exchange, received under the right of trust, transferred from inventories, etc.) | - | - | - |
| 1113 | Nurašyta / Written off | - | - | - |
| 1114 | Parduota / Sold | - | - | - |
| 1130 | Perrašyta iš vieno straipsnio į kitą, įskaitant turtą, baigtą statyti, rekonstruoti ir remontuoti ataskaitiniais metais ir perrašytą į tam tikrą turto rūšies straipsnį (visa statomo objekto, rekonstravimo ar remonto darbų verte) / Rewritten from one article to another | - | - | F |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| 1131 | Vertės pokytis dėl perkainojimo (parodoma, kai turtas apskaitomas perkainuota verte) / Change in value due to revaluation (shown when assets are carried at revalued amount) | 1201, 1221, 1231, 1241, 12503, 12611 | Change in land value, machinery and equipment, vehicles, other devices, appliances and tools due to revaluation. Change in a fair value of land as investment assets (+/-), Change in value of non-current tangible assets under construction (produced) or reconstructed due to revaluation | F |
| 1115 | Apskaičiuota nusidėvėjimo per metus / Estimated depreciation per year | 1227, 1228, 1237, 1238, 1247, 1248 | Depreciation of machinery and equipment, vehicle, other devices, appliances and tools acquisition and Depreciation of change in value of machinery and equipment, vehicles, other devices, appliances and tools due to revaluation | F |
| 1133 | Vertės sumažėjimas / Imairment | 1209, 1229, 1239, 1249, 12509, 12619 | Impairment of Land, Machinery and equipment, Vehicle, Other devices, appliances and tools, Land as investment assets, non-current tangible assets under construction (produced) or reconstructed | F |
| 1116 | Ilgalaikis materialusis turtas metų pabaigoje / Tangible fixed assets at the end of the year | 120, 122, 123, 124, 1250, 126 | Land, Machinery and equipment, Vehicles, Other devices, appliances and tools, Land as investment assets, Advances paid and works of construction (production) of tangible assets in progress | F |
| | **ILGALAIKIS NEMATERIALUSIS TURTAS (balansine (likutine) verte) / INTANGIBLE FIXED ASSETS (carrying amount)** | | | |
| 1200 | Ilgalaikis nematerialusis turtas metų pradžioje (atitinka 300 kodo 2 skl. ir balanso A.1.– A.1.6. straipsnius) / Intangible fixed assets in the beginning of the year | 11 | Intangible assets | F |
| 1212 | Įsigyta per metus (įskaitant įsigytą išperkamosios nuomos būdu) / Acquired during the year (including leased) | 1110, 1130, 1140, 1150 | Acquisition costs of Development, Software, Concessions, patents, licenses, trademarks and similar rights, other intangible assets | F |
| 1213 | Pasigaminta savo jėgomis naudoti sau / Made to use on their own | - | - | - |
| 1210 | Kitu būdu gauta (gauta turto nemokamai, patikėjimo teise valdyti, dovanota, įsigyta mainais ir kt.) / Received in another way (received property free of charge, trust right to manage, donated, purchased in exchange, etc.) | - | - | - |
| 1203 | Įsigyta turto įmonėms susijungus, parduota (–) įmonėms išsiskyrus / Acquired assets in a business combination, sold (-) in a business split | 1120 | Goodwill acquisition cost price | F |
| 1205 | Nurašyta / Written off | - | - | - |

| No. of indicator in Statistical report | Statistical report indicator LT / EN | No. of indicator in SAF-T file | SAF-T file corresponding indicator | Compliance |
|---|---|---|---|---|
| 1208 | Parduota / Sold | - | - | - |
| 1202 | Perrašyta iš vieno straipsnio į kitą / Rewritten from one article to another | - | - | - |
| 1206 | Apskaičiuota amortizacijos per metus / Calculated amortization per year | 1118, 1128, 1138, 1148, 1158 | Amortization of Development, goodwill, Software, Concessions, patents, licenses, trademarks and similar rights, other intangible assets | F |
| 1204 | Vertės sumažėjimas / Impairment | 1119, 1129, 1139, 1149, 1159 | Impairment of Development, Goodwill, Software, Concessions, patents, licenses, trademarks and similar rights, other intangible assets | F |
| 1207 | Ilgalaikis nematerialusis turtas metų pabaigoje (atitinka 300 kodo 1 skl. ir balanso A.1.– A.1.6. straipsnius) / Intangible fixed assets at the end of the year | 111, 112, 113, 114, 115 | Development works, Goodwill, Software, Concessions, patents, licenses, trademarks and similar rights, Other intangible assets | F |

## Appendix 5. Accuracy assessment of the data integration into statistical report

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Difference, % | SAF-T file value | Statistical report value | Difference, % | SAF-T file value | Statistical report value | Difference, % |
| Intangible assets | 11 | 300 | 350106 | 350106 | 0 | 81256 | 81256 | 0 | 1400 | 0 | 100 |
| Development works | 111 | 1207_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Development costs | 1110 | 1212_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Development amortization (-) | 1118 | 1206_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Development impairment (-) | 1119 | 1204_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Goodwill | 112 | 1207_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Goodwill acquisition cost price | 1120 | 1203_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Amortization of goodwill (-) | 1128 | 1206_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Goodwill impairment (-) | 1129 | 1204_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Software | 113 | 1207_4 | 311337 | 311337 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Software acquisition cost price | 1130 | 1212_4 | 160716 | 132649 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| Software amortization (-) | 1138 | 1206_4 | 414921 | 414921 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Software impairment (-) | 1139 | 1204_4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Concessions, patents, licenses, trademarks and similar rights | 114 | 1207_5 | 0 | 0 | 0 | 22435 | 22436 | 0 | 0 | 0 | 0 |
| Concessions, patents, licenses, trademarks and similar rights acquisition cost price | 1140 | 1212_5 | 0 | 0 | 0 | 24475 | 24475 | 0 | 0 | 0 | 0 |
| Concessions, patents, licenses, trademarks and similar rights amortization (-) | 1148 | 1206_5 | 0 | 0 | 0 | 2040 | 2039 | 0 | 0 | 0 | 0 |
| Concessions, patents, licenses, trademarks and similar rights impairment (-) | 1149 | 1204_5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other intangible assets | 115 | 1207_6 | 38770 | 38769 | 0 | 58820 | 58820 | 0 | 1400 | 0 | 100 |
| Costs of other intangible assets acquisition | 1150 | 1212_6 | 38770 | 38770 | 0 | 45952 | 57513 | -20 | 1768 | 0 | 100 |
| Amortization of other intangible assets (-) | 1158 | 1206_6 | 753 | 754 | 0 | 15816 | 27378 | -42 | 368 | 0 | 100 |
| Impairment of other intangible assets (-) | 1159 | 1204_6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tangible assets | 12 | 301 | 38987 | 38987 | 0 | 40000 | 40000 | 0 | 12595 | 13995 | -10 |
| Land | 120 | 1116_3 | 0 | 0 | 0 | 0 | 40000 | -100 | 0 | 0 | 0 |

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| Land acquisition cost price | 1200 | 1135_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in land value due to revaluation | 1201 | 1131_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Land impairment (-) | 1209 | 1133_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Machinery and equipment | 122 | 1116_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Machinery and equipment acquisition cost price | 1220 | 1135_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in value of machinery and equipment due to revaluation | 1221 | 1131_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Machinery and equipment prepared for use | 1222 | 1130_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation of machinery and equipment acquisition cost price (-) | 1227 | 1115_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation of change in value of machinery and equipment due to revaluation (-) | 1228 | 1115_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Machinery and equipment impairment (-) | 1229 | 1133_7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vehicles | 123 | 1116_8 | 36786 | 36786 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vehicle acquisition cost price | 1230 | 1135_8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in value of vehicles due to revaluation | 1231 | 1131_8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vehicles prepared for use | 1232 | 1130_8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation of vehicle acquisition cost price (-) | 1237 | 1115_8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation of change in value of vehicles due to revaluation (-) | 1238 | 1115_8 | 10540 | 10540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vehicle impairment (-) | 1239 | 1133_8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other devices, appliances and tools | 124 | 1116_9 | 2201 | 2201 | 0 | 0 | 0 | 0 | 12595 | 13995 | -10 |
| Other devices, appliances and tools acquisition cost price | 1240 | 1135_9 | 0 | 0 | 0 | 0 | 0 | 0 | 3470 | 6381 | -46 |
| Change in value of other devices, appliances and tools due to revaluation | 1241 | 1131_9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other devices, appliances and tools prepared for use | 1242 | 1130_9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation of other devices, appliances and tools acquisition cost price (-) | 1247 | 1115_9 | 55217 | 55216 | 0 | 0 | 0 | 0 | 4658 | 3258 | 43 |
| Depreciation of change in value of other devices, appliances and tools due to revaluation | 1248 | 1115_9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| (-) | | | | | | | | | | | |
| Other devices, appliances and tools impairment (-) | 1249 | 1133_9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Land as investment assets | 1250 | 1116_3 | 0 | 0 | 0 | 40000 | 40000 | 0 | 0 | 0 | 0 |
| Acquisition cost price of land as investment assets | 12500 | 1135_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in a fair value of land as investment assets (+/-) | 12503 | 1131_3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Land as investment assets impairment (-) | 12509 | 1133_3 | 0 | 0 | 0 | 5181 | 5181 | 0 | 0 | 0 | 0 |
| Advances paid and works of construction (production) of tangible assets in progress | 126 | 1116_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Advances paid for non-current tangible assets | 1260 | 1135_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Works of construction (production) of tangible assets in progress | 1261 | 1104_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-current tangible assets under construction (produced) or reconstructed | 12610 | 1102_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Change in value of non-current tangible assets under construction (produced) or reconstructed due to revaluation | 12611 | 1131_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Impairment of non-current tangible assets under construction (produced) or reconstructed (-) | 12619 | 1133_2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Financial assets | 16 | 302 | 9345105 | 9345105 | 0 | 2835454 | 2835454 | 0 | 616711 | 0 | 100 |
| Shares of corporate group‘s companies | 160 | 306 | 0 | 4140941 | -100 | 0 | 2835454 | -100 | 616711 | 0 | 100 |
| Loans granted to the enterprises of corporate group | 161 | 308 | 5196915 | 5196915 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Receivables from the enterprises of corporate group | 162 | 326 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shares of associated enterprises | 163 | 328 | 4140941 | 0 | 100 | 2835454 | 0 | 100 | 0 | 0 | 0 |
| Loans granted to associated enterprises | 164 | 330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Receivables from associated enterprises | 165 | 331 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Long term investment | 166 | 332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Amounts to be received after one year | 167 | 333 | 7249 | 7249 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other financial assets | 168 | 307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other non-current assets | 17 | 329 | 52245 | 52245 | 0 | 177560 | 177560 | 0 | 1217 | 1217 | 0 |
| Assets of deferred corporate income tax | 171 | 340 | 31206 | 31206 | 0 | 177560 | 177560 | 0 | 1217 | 1217 | 0 |

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| Biological assets | 172 | 341 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other assets | 173 | 342 | 21040 | 21039 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inventories | 20 | 309 | 14744 | 14745 | 0 | 2636168 | 2636168 | 0 | 0 | 25 | -100 |
| Raw materials, materials and mounting elements | 201 | 310 | 0 | 0 | 0 | 20500 | 20500 | 0 | 0 | 0 | 0 |
| Unfinished products and works in progress | 202 | 311 | 0 | 0 | 0 | 250677 | 250677 | 0 | 0 | 0 | 0 |
| Products | 203 | 312 | 0 | 0 | 0 | 2273482 | 2273482 | 0 | 0 | 0 | 0 |
| Products purchased for resale | 204 | 313 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biological assets | 205 | 334 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-current tangible assets for sale | 206 | 316 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Advances paid | 208 | 314 | 14744 | 14745 | 0 | 91509 | 91509 | 0 | 0 | 25 | -100 |
| Amounts to be received within one year | 24 | 317 | 1013685 | 1013685 | 0 | 636125 | 636125 | 0 | 1928423 | 2004103 | -4 |
| Trade accounts receivable | 241 | 318 | 0 | 0 | 0 | 124126 | 124126 | 0 | 1688753 | 1690118 | 0 |
| Debts of the enterprises of corporate group | 242 | 335 | 769827 | 769827 | 0 | 485537 | 485537 | 0 | 172077 | 172077 | 0 |
| Debts of associated enterprises | 243 | 336 | 0 | 0 | 0 | 0 | 26462 | -100 | 0 | 0 | 0 |
| Other receivables | 244 | 320 | 243858 | 243858 | 0 | 26462 | 0 | 100 | 67593 | 141908 | -52 |
| Short-term investment | 26 | 322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 616711 | -100 |
| Shares of corporate group‘s companies | 261 | 337 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other investment | 262 | 338 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 616711 | -100 |
| Cash and cash equivalents | 27 | 325 | 13340 | 13340 | 0 | 57664 | 57664 | 0 | 52709 | 52709 | 0 |
| Prepaid expense and accruals | 29 | 339 | 74051 | 74051 | 0 | 509751 | 509752 | 0 | 16870 | 15421 | 9 |
| Capital | 30 | 440 | 3362413 | 3362413 | 0 | 289600 | 289600 | 0 | 2896 | 2896 | 0 |
| Capital corresponding to assets that under laws can be owned only by the state | 306 | 409 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital corresponding to the centrally managed assets of the state | 307 | 409 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Share premiums | 31 | 402 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Revaluation reserve | 32 | 404 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reserves | 33 | 405 | 826677 | 826677 | 0 | 28962 | 28962 | 0 | 290 | 290 | 0 |
| Retained earnings (loss) | 34 | 406 | 4453281 | 4918046 | -9 | 1757802 | 2191360 | -20 | 0 | -144374 | -100 |
| Grants and subsidies | 40 | 407 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| Provisions | 41 | 408 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Amounts payable after one year and other long-term liabilities | 42 | 410 | 334835 | 334835 | 0 | 2836000 | 2836000 | 0 | 11338 | 2742814 | -100 |
| Debt liabilities | 421 | 412 | 62389 | 62389 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Debts to credit institutions | 422 | 411 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Advances received | 423 | 415 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Trade accounts payable | 424 | 414 | 0 | 0 | 0 | 0 | 0 | 0 | 11338 | 17900 | -37 |
| Payables as per promissory notes and cheques | 425 | 413 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Payables to enterprises of corporate group | 426 | 431 | 272446 | 272446 | 0 | 2836000 | 2836000 | 0 | 0 | 2724914 | -100 |
| Payables to associated enterprises | 427 | 432 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other payables and long-term liabilities | 428 | 418 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Amounts to be paid within one year and other short-term liabilities | 44 | 419 | 533952 | 605820 | -12 | 1266532 | 1367633 | -7 | 2725994 | 100481 | 2613 |
| Debt liabilities | 440 | 433 | 70076 | 70076 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Debts to credit institutions | 441 | 421 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Advances received | 442 | 425 | 0 | 0 | 0 | 4099 | 95319 | -96 | 0 | 0 | 0 |
| Trade accounts payable | 443 | 424 | 152155 | 152155 | 0 | 610810 | 610810 | 0 | 6266 | 0 | 100 |
| Payables as per promissory notes and cheques | 444 | 422 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Payables to enterprises of corporate group | 445 | 423 | 0 | 0 | 0 | 397671 | 397671 | 0 | 2724915 | 0 | 100 |
| Payables to associated enterprises | 446 | 434 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Corporate income tax liabilities | 447 | 426 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Employment related liabilities | 448 | 427 | 175102 | 246970 | -29 | 30196 | 40077 | -25 | 39128 | 39127 | 0 |
| Other payables | 449 | 429 | 136619 | 136619 | 0 | 223756 | 223756 | 0 | -44315 | 61354 | -172 |
| Accrued charges and deferred income | 49 | 435 | 926341 | 854473 | 8 | 361526 | 260424 | 39 | 2074 | 2074 | 0 |
| | | 327 | 10902264 | 10902264 | 0 | 6973979 | 6973979 | 0 | 2629924 | 2704181 | -3 |
| | | 430 | 10437499 | 10902264 | -4 | 6540422 | 6973979 | -6 | 2742591 | 2704181 | 1 |
| Sales income | 50 | 600 | 3254630 | 3254630 | 0 | 7011537 | 7011537 | 0 | 8950200 | 8950182 | 0 |
| Income from services provided | 5001 | 601 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other receivables | 2446 | 603 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sales cost price | 60 | 604 | 0 | 3188243 | -100 | 2578896 | 2578896 | 0 | 7757448 | 7757448 | 0 |

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % | SAF-T file value | Statistical report value | Diffe-rence, % |
| Products purchased for resale | 204 | 605 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Income resulting from change in a fair value of biological assets | 51 | 637 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 606 | 3254630 | 66387 | 4803 | 4432641 | 4432641 | 0 | 1192752 | 1192734 | 0 |
| Sales costs | 62 | 608 | 11739 | 0 | 100 | 1484036 | 1482599 | 0 | 0 | 1061151 | -100 |
| General and administrative expenses | 63 | 609 | 3224489 | 61990 | 5102 | 2486855 | 2488292 | 0 | 1337297 | 275992 | 385 |
| Other operating income | 54 | 611 | 31225 | 31225 | 0 | 14264 | 14264 | 0 | 0 | 300 | -100 |
| Profit from transfer of non-current assets | 5401 | 613 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Other income | 5400 | 614 | 17000 | 17000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other operating costs | 64 | 615 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 136 | -100 |
| Loss due to transfer of non-current assets | 6400 | 616 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 136 | -100 |
| Income from investment in shares of the parent company, subsidiaries and associated enterprises | 55 | 631 | 798089 | 798089 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Income from other long-term investment and loans | 56 | 632 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other income from interest and similar income | 58 | 633 | 79728 | 79728 | 0 | 6186 | 0 | 100 | 12 | 12 | 0 |
| Impairment of financial assets and short-term investment | 67 | 635 | 400594 | 400594 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Interest expense and other similar expenses | 68 | 636 | 36515 | 36516 | 0 | 49775 | 43588 | 14 | 154 | 153 | 1 |
| Interest expense of loans granted by enterprises of corporate group; Interest expense of loans granted by associated enterprises; Interest expense of loans granted by other companies; Interest expenses for the assets acquired in the way of financial lease | 6800, 6801, 6802, 6806 | 622 | 36268 | 33909 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 625 | 490334 | 476329 | 3 | 432425 | 432426 | 0 | -144687 | -144386 | 0 |
| Corporate income tax and similar taxes | 69 | 626 | 11564 | 11564 | 0 | -1131 | -1131 | 0 | -12 | -12 | 0 |
| | | 627 | 478770 | 464765 | 3 | 433556 | 433557 | 0 | -144675 | -144374 | 0 |
| Cost price of products and services acquired | 6002 | 550 | 1137040 | 1137850 | 0 | 6649391 | 6154989 | 8 | 9094887 | 9094593 | 0 |
| Other general and administrative expenses | 6312 | 501 | 27326 | 27462 | 0 | 497238 | 436886 | 14 | 0 | 0 | 0 |
| Other general and administrative expenses | 6312 | 507 | 27326 | 27462 | 0 | 6821 | 6979 | -2 | 0 | 0 | 0 |
| Cost price of products and services acquired | 6002 | 540 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cost price of products and services acquired | 6002 | 541 | 0 | 0 | 0 | 0 | 0 | 0 | 7757448 | 7757448 | 0 |

| Account description | SAF-T file indicator No. | Statitical report indicator No. | Company A | | | Company B | | | Company C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAF-T file value | Statistical report value | Difference, % | SAF-T file value | Statistical report value | Difference, % | SAF-T file value | Statistical report value | Difference, % |
| Repair and maintenance costs | 6301 | 511 | 12163 | 12163 | 0 | 0 | 0 | 0 | 1784 | 1784 | 0 |
| Repair and maintenance costs | 6301 | 512 | 17163 | 17163 | 0 | 0 | 0 | 0 | 0 | 1 | -100 |
| Other general and administrative expenses | 6312 | 522 | 0 | 0 | 0 | 0 | 0 | 0 | 3771 | 3771 | 0 |
| Lease costs | 6300 | 526 | 305593 | 305593 | 0 | 1393 | 56112 | -98 | 0 | 1 | -100 |
| Unfinished products and works in progress; Products | 202,203 | 533 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unfinished products and works in progress; Products | 202,203 | 534 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sales costs; General and administrative expenses | 62,63 | 536 | 774794 | 775469 | 0 | 6150760 | 5661991 | 9 | 1331896 | 1331588 | 0 |